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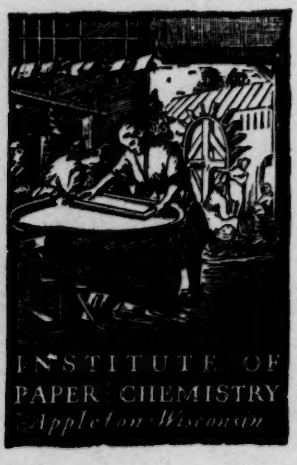
BULLETIN

OF

THE INSTITUTE OF PAPER CHEMISTRY



AFFILIATED WITH

LAWRENCE COLLEGE

APPLETON, WISCONSIN

LIBRARY NOTES

DECEMBER · 1953

Volume 24 Number 4

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THE INSTITUTE OF PAPER CHEMISTRY

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Books and Pamphlets Added to the Library During November

CANADA—STATISTICS

CANADA. *Dominion Bureau of Statistics.* The Canada year book, 1952-3; the official statistical annual of the resources, history, institutions, and social and economic conditions of Canada. Ottawa, Edmond Cloutier, Queen's printer . . . , 1953. 1266 p.

CHEMICAL ENGINEERING

LAUER, B. E., and HECKMAN, RUSSELL F. Chemical engineering techniques. New York, Reinhold, 1952. 496 p.

CHEMISTRY—BIBLIOGRAPHY

DYSON, G. MALCOLM. A short guide to chemical literature. New York, Longmans, Green [1951, reprinted 1952] 144 p.

CHEMISTRY, ANALYTIC—QUANTITATIVE

SNELL, FOSTER DEE, and SNELL, CORNELIA T. Colorimetric methods of analysis, including some turbidimetric and nephelometric methods. 3d ed. New York, Van Nostrand, 1953. v. III. Organic-I. 606 p.

COLORIMETRY

OPTICAL SOCIETY OF AMERICA. *Committee on Colorimetry.* The science of color. New York, Crowell [c1953] 385 p.

FIBER—STRUCTURE

BUCHER, HANS. Die Tertiärlamelle von Holzfasern und ihre Erscheinungsformen bei Coniferen. Untersuchungen aus dem Laboratorium der Cellulosefabrik Attisholz AG., vorm. Dr. B. Sieber, Attisholz bei Solothurn (Schweiz). Derendingen, Buchdruckerei Habegger, 1953. 53 p. + 28 plates.

FIBERS

[NATIONAL ANALYSTS, INC.] Fibers, opinions and practices among manufacturers of cordage and twine. U. S. Bureau of Agricultural Economics. [Division of Special Surveys] Marketing research report no. 51. Washington [U. S. Govt. Print. Off.] 1953. 98 p.

FORESTS AND FORESTRY

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS. National forest policies in Europe. FAO forestry and for-

est products studies no. 8. Rome, Italy, The Organization, 1953. 370 p.

LINEAR PROGRAMMING

COOPER, W. W., HENDERSON, A., and CHARNES, A. An introduction to linear programming. Part I. An economic introduction to linear programming. Part II. Lectures on the mathematical theory of linear programming. New York, Wiley [c1953] 74 p.

MACHINERY

RIEGEL, EMIL RAYMOND. Chemical process machinery. 2d ed. New York, Reinhold, 1953. 735 p.

MICROSCOPE AND MICROSCOPY

FIEBIGER, HARALD. Mikroskopie in der Papierindustrie. Heft 3 der Schriftenreihe zur Berufsausbildung in der Papierindustrie. Herausgegeben von der Vereinigung der Arbeitgeberverbände der Deutschen Papierindustrie E.V., Wiesbaden. [Heidelberg, Werkschriften-Verlag, 1953] 51 p.

PACKAGING

HARWELL, EDWARD M., ANDERSON, DALE L., SHAFFER, PAUL F., and KNOWLES, ROBERT H. Packaging and displaying meats in self-service meat markets. U. S. Department of Agriculture. Production and Marketing Administration. Marketing research report no. 44. Washington [U. S. Govt. Print. Off.] 1953. 86 p.

PAPER—SAMPLE BOOKS

HORNE, ROBERT, & CO. LTD. Paper for books. London, The Company, 1953. 62 p. + unnumbered samples.

PAPER—TESTING

REED, ROBERT F., and WHEELER, GORDON C. The LTF pick tester for offset papers. Technical bulletin no. 19. New York, Lithographic Technical Foundation [c1953] 34 p.

PAPER MAKING AND TRADE—ECONOMICS

PENNSYLVANIA. UNIVERSITY. *Wharton School of Finance and Commerce. Industrial Research Department.* Capital requirements and operating ratios. The coarse paper industry, 1949 and 1950. Prepared for the Mutual Security Agency. Productivity and Technical Assistance Division and U. S. Department of Labor. Bureau of Labor Statistics. Washington [processed] 1953. 45 p.

PAPER MAKING AND TRADE—HISTORY

JANOT, JEAN-MARIE. Les moulins à papier de la région Vos-

gienne. Préface de E. Coornaert. Nancy, Imprimerie Berger-Levrault, 1952. 2 v. 525 p.

PAPER MAKING AND TRADE—RAW MATERIALS

KEIM, KARL. Geschichtliche Entwicklung der Papierherstellung und der Rohstoffe. Heft 2 der Schriftenreihe zur Berufsausbildung in der Papierindustrie. Herausgegeben von der Vereinigung der Arbeitgeberverbände der Deutschen Papierindustrie E.V., Wiesbaden. [Heidelberg, Werkschriften-Verlag, 1953] 56 p.

PAPER SPECIALTIES

HOYER, FRITZ. Papier als Druckträger. 2. unveränd. Aufl. Leipzig, Dr. Sändig Verlagsgesellschaft, 1944. 92 p. + 16 samples.

TRADE DIRECTORIES

CHEMICAL ENGINEERING CATALOG, 1953-54. 38th ed. New York, Reinhold, c1953. 1955 p.

NATIONAL DIRECTORY of the Canadian pulp and paper industries, 1953. J. N. Stephenson, editor. Gardenvale, Que., Natl. Business Publications, 1953. 478 p.

WATER—POLLUTION

INGRAM, WILLIAM MARCUS, and DOUDOROFF, PETER. Publications on industrial wastes relating to fish and oysters; a selected bibliography. U. S. Department of Health, Education, and Welfare. Public Health Service. Division of Water Pollution Control. [Public Health Service publication no. 270. Public health bibliography series no. 10] Washington, U. S. Govt. Print. Off., 1953. 28 p.

RUDOLFS, WILLEM, ed. Industrial wastes, their disposal and treatment. New York, Reinhold, 1953. 497 p.

Survey of Periodical Articles

The following are abstracts of opinions expressed by writers in the technical journals. The Institute of Paper Chemistry takes no responsibility for the opinions here summarized.

ADHESIVES

ANON. The ABC of papers and boards. Papetier 7, no. 9: 83-5; no. 10: 67-9 (September, October, 1953). [In French] *cf.* B.I.P.C. 24: 40.

The art of laminating paper to board without warping and distortion and different glues and adhesives used in the paper industry are discussed in the first article, including gelatin, fish glue, ossein, mixtures of ossein and cellulose, and bone glue. The second article deals with applications and covers dextrin, starch paste, resins, casein, albumin, and preservatives. E.S.

ELIAS, R. T. Adhesives for paper. Paper Trade J. 137, no. 20: 116-20 (Nov. 13, 1953).

The author presents an analysis of adhesives used in the pulp and paper industry, classified as water base (gelatin glue, casein, soybean protein, starch, sodium silicate, and emulsions), solvent or lacquer base (nonaqueous solutions), and hot melt. This is one in a series of industrial lectures on paper and paperboard converting presented at Western Michigan College. 4 references. R.A.S.

AIR FILTERS

ANON. Special filter paper shows excellent performance in cleaning air. Paper Ind. 35, no. 8: 882-4 (November, 1953); *cf.* B.I.P.C. 23: 703.

A very similar description of the Ultra-Aire filter and its applications as in the previous reference is given. 7 figures. E.S.

NORTHRUP, DAVID H. The A.E.C. or C.W.S. air filter. Chem. Eng. Progr. 49, no. 10: 513-16; discussion: 516-17 (October, 1953); *cf.* B.I.P.C. 23: 703.

The asbestos-cellulose fiber filter paper developed by Arthur D. Little, Inc. for the Chemical Warfare Service and later for the Atomic Energy Commission is described; in addition, the complete air filter, filter tests, types of installations, and economy of the unit are covered. 6 figures. E.S.

ASBESTOS

ANON. Asbestos in Canada. Can. Chem. Processing 37, no. 10: 18, 20 (September, 1953).

Statistics on the Canadian asbestos production are presented which show that Canada produces two thirds of the crude asbestos mined in the world, most of which is exported in unmanufactured form. Canada does not yet manufacture all asbestos products used in the country. The trend is toward more manufacturing in Canada to satisfy the domestic market; at present there are no indications that the country intends to become a manufactured-goods exporter on a large scale. 3 tables. E.S.

ASSOCIATIONS

MACDONALD, R. G. TAPPI and the strawboard industry. Tappi 36, no. 11 : 80A, 82A (November, 1953).

The author outlines the services of the Technical Association of the Pulp and Paper Industry with particular reference to those of possible interest to the strawboard industry. E.S.

BARKERS AND BARKING

BELL, G. E. Developments in mechanical barking. Canada Lumberman 73, no. 6:4 p. (June, 1953); Pulp Paper Mag. Can. 54, no. 13: 130-1, 133, 136 (December, 1953).

Interest in low-cost efficient barking methods has resulted in the large number of barking machines recently developed. The following machines are described: the Soderhamn portable barking machine; the Skoglund, Mira, Sund, Valo, Carpenter, Wi-mar, Jatka disk, Parkko disk, K.M.W., and Palmia barkers; and the Wood Cleaner. Most of these are Scandinavian developments. 12 figures. R.A.S.

BIOCHEMICAL TESTING

GELLMAN, I., and HEUKELEKIAN, H. Studies of biochemical oxidation by direct methods. I. Direct method for determining B.O.D. Sewage and Ind. Wastes 23, no. 10: 1267-81 (October, 1951).

A description of the Warburg and Sierp apparatus and the means for calculating oxygen demands are given. The results of experiments dealing with a carbon dioxide absorption modification for the Sierp apparatus, the effect of agitation on oxygen-demand measurements, the selection of proper sample volume and establishment of measurable oxygen-demand range for each apparatus, the determination of the degree of reproducibility, and the comparison of results with those for the standard dilution method are presented. Based on the results obtained with the above modifications, a standard method for the direct measurement of oxygen demand of sewages and wastes is proposed. 7 tables, 4 figures, and 24 references. E.S.

GELLMAN, I., and HEUKELEKIAN, H. Studies of biochemical oxidation by direct methods. III. Oxidation and purification of industrial wastes by activated sludge. Sewage and Ind. Wastes 25, no. 10: 1196-209 (October, 1953).

A study was made of the relative importance of several factors (sludge and waste concentration, sludge acclimatization and age, and temperature) affecting the rates of oxidation and purification of various industrial wastes using normal and acclimatized activated sludge. The wastes employed included rag, rope, and jute cooking liquors, spent sulfite liquor, and board-mill white water. A study was made of the possible relationships between resultant oxidation and purification rates, as well as between B.O.D. loading, sludge accumulation, sludge age, and sludge oxygen demand. The results are presented in tabular and graphical form. 8 tables, 8 figures, and 5 references. E.S.

HEUKELEKIAN, H., and GELLMAN, I. Studies of biochemical oxidation by direct methods. II. Effect of certain environmental factors on the biochemical oxidation of wastes. Sewage and Ind. Wastes 23, no. 12: 1546-63 (December, 1951).

With the use of direct methods of oxygen utilization, the effects of pH value, nutrient addition, substrate concentration, volume and source of sewage seed, and seed adaptation on the oxidation of a number of industrial wastes (including board-mill white water, rope cook liquor, and spent sulfite liquor) were studied. The results indicate that the initial rate of oxidation of spent sulfite liquor and rope cook liquor is increased by an increase in sewage seed or adapted seed volume; however, the effect is minimized with increased periods of incubation. Spent sulfite liquor and rope cook liquor are nontoxic and are amenable to biological treatment. 10 tables, 8 figures, and 13 references. E.S.

BLEACHING

ANON. New Gaspesia bleach plant. Paper Mill News 76, no. 46: 136, 138, 142, 179 (Nov. 14, 1953); Paper Trade J. 137, no. 21: 20-3 (Nov. 20, 1953).

A brief description of the new high-density Kamyr bleach plant of the Gaspesia Sulphite Co., Ltd. at Quebec, P.Q. is given, including the building and installations, train shed, materials handling, storage, central control room, and remote manual control. 1 illustration. E.S.

BLEACHING—GROUNDWOOD

ROHM & HAAS COMPANY. *Resinous Products Division.* Bright future for groundwood pulp bleached with sodium hydrosulfite. Resin Rev. no. 9: 11-15 (September, 1953).

Data are presented from recent studies carried out by the company on the use of sodium hydrosulfite in bleaching mechanical pulp; the pulp used was spruce groundwood, wet lap, defibered at 3% consistency for 10 minutes in a Valley Iron Works beater without weights on the bedplate. The initial G.E. brightness was 58 points. The study gave the following results: A mixture of sodium hydrosulfite and trisodium phosphate, used at 2% concentration based on dry pulp, produces 8-10 points increase in the brightness of handsheets made from the bleached pulp. Special pulp-handling equipment is not required. Temperature is not critical in the range of 110-180°F., although the most rapid and complete bleach is obtained at 140-160°. The time for maximum bleach in the optimum temperature range is 15-30 minutes. This suggests the desirability of utilizing the heat generated by the grinder and bleaching shortly after grinding. Reversion in brightness on aging is not excessive. The 3:2 mixture of sodium hydrosulfite and trisodium phosphate does not effectively bleach kraft pulp, but may be useful in obtaining paper of more uniform and more brilliant color when dyes are used. 7 figures. E.S.

BLEACHING—SEMICHEMICAL PULP

BJÖRKQVIST, KARL J., GUSTAFSSON, SUNE, and JØRGENSEN, LEIF. The removal of lignin and carbohydrates during bleaching of semichemical pulps. Svensk Papperstidn. 56, no. 19: 734-8 (Oct. 15, 1953). [In English; German and Swedish summaries]

The purpose of the present study was the elucidation of certain details of general interest in the bleaching of neutral sulfite pulps. It is emphasized that the work was not concerned with technical or economic aspects of the problem. It is shown that fully bleached (i.e., lignin-free) neutral sulfite pulps can be obtained in yields of more than 60% from birchwood by treatment with 18% chlorine and 1.5% hypochlorite, and of more than 55% from sprucewood by treatment with 32% chlorine and 6% hypochlorite. As was to be expected, the consumption of chemicals is appreciably higher for spruce

than for birch. Apart from lignin, only noncellulosic hexosans are lost on bleaching with chlorine and hypochlorite. The pentosans and uronic acids in the unbleached pulps are resistant to bleaching; they remain almost entirely in the bleached pulps. The presence of the pentosans and uronic acids is important for the papermaking properties of these pulps; this holds particularly for birch neutral sulfite pulps, because birchwood contains more of these compounds than spruce. 6 tables, 5 figures, and 11 references.
E.S.

BOARD—CONVERSION

AMERICAN BOXMAKER. Mobility sparks production at United. Am. Boxmaker 42, no. 11: 11-13, 37 (November, 1953); *cf.* B.I.P.C. 24: 181-2.

The author reviews the setup-box production line of the United Paper Box Corp., Chicago; the company's facilities consist of raw stock storage and scoring and cutting operations following a circular flow line on the first floor; gluing, covering, and wrapping also in a circular flow line on the second floor; and the storage of finished boxes on the third floor. 7 figures.
R.A.S.

ANON. Some pointers on box stitching. Fibre Containers 38, no. 10: 128-9 (October, 1953).

Directions on the basic operating principles of satisfactory wire stitching are given under the five headings: wire draw, proper wire cutoff, stitch legs of equal length, proper alignment of clincher block, and sufficient compression of material. A good stitch is one which has its crown flush with the surface of the material being stitched and the legs clinched sufficiently tight to bury the ends partially in the material. 1 diagram. E.S.

BOARD—STATISTICS

ANON. Statistics on wallboard. Finnish Paper and Timber 4, no. 4: 57; no. 7: 90 (June, October, 1953). [In French and English]

Statistical data on the Finnish wallboard industry with eight wallboard factories and an annual capacity of approximately 165,000 metric tons are given. Finland is the third largest wallboard producer, with the United States and Sweden occupying first and second places, respectively. Wallboard production in Finland is principally an export industry. 3 tables. E.S.

BOARD, ASPHALT

SUESS, ROMAN J., and MCVICKAR, ROGER E. Asphalt saturated and laminated paperboard. Paper Trade J. 137, no. 20: 262, 264-6 (Nov. 13, 1953).

Common uses, limitations, saturation, lamination, types of paperboard, and testing of both raw materials and the end product of asphalt paperboards are listed. This is one in a series of industrial lectures on paper and paperboard converting presented at Western Michigan College. 3 diagrams. R.A.S.

BOARD, BOX

MULLEN, EDWARD K. Quality requirements in folding and setup boxboards. Tappi 36, no. 11: 138-40A (November, 1953).

Many upward revisions in boxboard quality have resulted from the neces-

sity of sales appeal to the finished cartons and the use of automatic machinery and new printing processes in their manufacture. Control of moisture, caliper, weight, density, surface characteristics, and rigidity or stiffness are listed as important physical qualities; accessory requirements include the absence of dust, and proper packing, handling, and delivery. In addition to these general quality features, there are numerous variations and special requirements for individual users. E.S.

BOARD MILLS

ANON. New California mill; Flintkote San Leandro plant is modern. Pulp & Paper 27, no. 11: 80, 82-3, 85 (October, 1953); *cf.* B.I.P.C. 23: 788.

A description of the San Leandro plant of the Flintkote Co., similar to that in the previous reference, is given. 16 figures. R.A.S.

ANON. Sonoco, a pioneer in South; visit to Hartsville, S.C., brings record up to date. Pulp & Paper 27, no. 11: 102, 104, 106 (October, 1953); *cf.* B.I.P.C. 20: 161.

Improvements and expansion since 1950 at Sonoco Products Co., Hartsville, S.C. are discussed. The replacement program for cylinder machines and the installation of one new cylinder machine are described; the production of neutral sulfite semichemical pulp, power and electrical additions (Babcock & Wilcox pulverized coal and oil burning boiler and a V nonautomatic extraction General Electrical turbo generator), community-employee facilities, and products are discussed. 9 illustrations. R.A.S.

BOARD MILLS—WASTE LIQUOR

BURGESS, F. J., FROST, O. W., and MERRYFIELD, FRED. Disposal of white water waste from a hardboard manufacturing process by land irrigation. Proc. Fourth Ann. Ind. Waste Conf., State Coll. of Washington: 29-32; discussion: 32 (1952).

The disposal of white water waste (I) from the hardboard mill near Forest Grove, Ore. by the Forest Fiber Products Co. is described. The plant manufactures a dense board (Forest Board) by mechanical means; no chemicals are used in pulping, although small amounts of resin, waxes, sulfuric acid, alum, and caustic soda are employed in the boardmaking process. (I) contains the soluble material washed from the pulp, largely carbohydrates and other organic derivatives from the wood, and presents a serious pollution problem during the summer when the flow of the river is exceedingly low. Lagooning was tried and had to be abandoned on account of odor problems. Irrigation of adjacent farmland was then successfully tried, and the problems involved with regard to crop selection, irrigation practice, soil fertilization, etc. are discussed. The results indicate that land irrigation can be a satisfactory and economical method of waste disposal. E.S.

BOARD SPECIALTIES

HARTFORD MACHINE SCREW COMPANY, *Hartford, Conn.* Wool-spinning spindle for use with paper tubes. Textile World 103, no. 11: 166 (November, 1953).

The company has brought out a new spindle for spinning wool on paper tubes; the paper tubes are said to reduce drastically bobbin cost and inventory, require less time for doffing and piecing up, and have a larger yarn capacity. 1 illustration. R.A.S.

BOARD TESTING—PHYSICAL

MARRA, G. G., and WILSON, J. W. Preliminary report on test method for evaluating gluability of hardboard. J. Forest Products Research Soc. 3, no. 4: 24-8 (November, 1953).

A tentative method, involving a gluability index, was developed for testing the gluability of hardboards and was applied to the standard and treated products of three manufacturers. Two adhesives, a casein and a urea-formaldehyde, were used to bond the two surfaces of the board in several orientations (face-to-face, back-to-back, and face-to-face after sanding). To determine the feasibility of the test method, the gluing conditions had to be standardized, and the particular conditions chosen for this study may not have been optimum for all boards. However, the two glues as applied appeared to have differing reactions on the treated and untreated boards and these reactions varied with the different manufacturers' products. Interactions of glue type and manufacturer with surface orientation also appeared evident. The data as collected appeared to require a transformation before analysis-of-variance procedures could be applied, but the most appropriate form for these data was not determined. It was found that the ideal situation of independence of the gluability index from the physical properties of the board was not completely attained. Treated boards appeared to affect the index in proportion to their inherent strengths. 5 tables and 7 figures.
E.S.

VERSEPUT, H. W. Some things we would like to know about the printability of boxboard. Tappi 36, no. 11: 152-3A (November, 1953).

It is generally considered that the properties of board which have the most influence upon the way it will print are the following: ink penetration, smoothness, compressibility, and surface strength. The author discusses available methods for testing these properties, none of which is considered to evaluate the printability of boxboard in a satisfactory manner. 4 references.
E.S.

CALCULATIONS

MÜHLENBEIN, K.-J. The weight determination of paper rolls. Allgem. Papier-Rundschau no. 17: 723-4 (Sept. 3, 1953). [In German] *cf.* B.I.P.C. 24: 183.

The calculation of the weight of a paper roll with the aid of a measuring stick and a diagram is described; the only magnitude to be known is the specific weight of the paper which must once be determined for the different types of paper handled by a mill. 3 figures and 2 footnotes. E.S.

CELLULOSE—DEGRADATION

MADARAS, G. W., and TURNER, H. A. Further observations on the effects of evaporating water from cotton cellulose. J. Soc. Dyers Colourists 69, no. 10: 371-7 + 1 plate (October, 1953); *cf.* B.I.P.C. 20: 855-6.

The experiments described in the previous reference have been extended with the object of excluding gaseous oxygen more rigorously from the system. When the purified cotton cloth was first maintained for three days in a high vacuum, and then brought into contact with chemically deoxygenated water in an atmosphere of purified nitrogen, evaporation produced a brown line, closely resembling that already described, at the boundary between wet

and dry cloth. With a modified procedure, when evaporation took place *in vacuo*, no brown coloration was observed, but evidence was obtained that chemical modification of cellulose in the boundary region was still taking place. 3 tables, 11 figures, and 14 references. E.S.

MARSH, P. B., MEROLA, G. V., and SIMPSON, M. E. Experiments with an alkali swelling-centrifuge test applied to cotton fiber. Textile Research J. 23, no. 11 : 831-41 (November, 1953).

A quantitative technique has been developed in which a weighed sample of cotton fiber is swollen in sodium hydroxide, centrifuged to remove liquid from between the fibers, and reweighed to determine its percentage increase in weight, the latter quantity being designated here as the fiber's "alkali-centrifuge value." The results obtained have been found to be related to two types of causal factors—namely, (1) the prior action of deteriorative agencies on the fiber, apparently especially on the outer wall of the fiber, and (2) the wall thickness of the fiber (as reflected in arealometer air-flow measurements). The fiber-deteriorative agencies which have been shown to bring about changes in the alkali-centrifuge value of cotton fiber include micro-organisms, certain enzymatically active filtrates from microbial growth media, sodium hypochlorite, hydrochloric acid, heat, and weathering. The microbial and enzymatic effects have been studied in more detail than the others. The new test is simple, rapid, inexpensive, quite highly reproducible, involves only standard laboratory equipment, and is essentially free from safety hazards to the operator. Several aspects of the methodology of the test are reported. 6 tables, 7 figures, and 14 references. E.S.

SAMUELSON, OLOF, GRANÅRD, GUNNAR, JÖNSSON, KURT, and SCHRAMM, KERSTIN. A comparison between the degradation of cotton and wood pulp. Svensk Papperstidn. 56, no. 20: 779-84 (Oct. 31, 1953). [In English; German and Swedish summaries]

Rate curves were determined for the degradation of cotton linters and wood pulp by acid hydrolysis, alkali cooking, or ozone. Determinations of yield, viscosity, solubility in hot and cold alkali, and carboxyl content were made. The rate of solution curves for alkali cooking are similar to those for acid hydrolysis. For cotton the easily accessible material is the same for both treatments. This is not true for wood which at 100°C. is already over 14% soluble in 5% sodium hydroxide. The ozonization curves are quite different from the other two and are interpreted as arising from some entirely different reaction mechanism. (Ozonization becomes more rapid with time both for cotton and wood cellulose.) The rate of degradation of the residue was studied by plotting viscosity against time. These curves are all similar in showing a very rapid drop in the first few hours followed by a slow leveling off. In all three cases the initial degradation of cotton is more rapid and the leveling off slower. In all cases the leveling-off D.P. is between 120 and 150. On account of the presence of wood polyoses other than cellulose, the behavior of sulfite pulp is more complicated than that of cotton as far as solubility in cold alkali (β- and γ-cellulose) is concerned. On acid hydrolysis the cold alkali solubility of the residue goes through a maximum for wood pulp, but increases steadily for cotton, as it does for both types of cellulose on cooking with alkali. The hot-alkali solubility of the residues is a measure of carbonyl content. Carboxyl content was also measured. The results indicate oxidation not only by ozone, but also during the alkali cook. The carbonyl increase during acid hydrolysis is presumably due to shortening of the molecule. Differences between cotton and wood celluloses are attributed to the presence of wood polyoses in the latter and to differences in the fine structure. The authors agree with Jørgensen that

"semiresistant" areas of an order intermediate between the easily accessible areas and the crystallites exist in wood cellulose (*cf.* B.I.P.C. 20: 706). 4 tables, 11 figures, and 9 references. K.W.,Jr.

SCHWENKER, ROBERT F., JR., and WHITWELL, JOHN C. Degradation of cellulose during mechanical processing. Part IV: Size reduction of cotton in a Wiley mill. Textile Research J. 23, no. 11: 804-8 (November, 1953); *cf.* B.I.P.C. 23: 708-9.

The degradative effect of the Wiley mill on cotton samples and the variables affecting this action are discussed. It is concluded that one of the most important mill variables is blade spacing, and that the form of the cotton sample is also of paramount importance. A microscopic examination of fiber segments confirms the latter conclusion. It is possible that the amount of degradation may also be a function of the D.P. of the sample. 3 tables, 3 figures, and 15 references. E.S.

CELLULOSE—HEMICELLULOSE

PREY, V., WALDMANN, E., and KRZANDALSKY, W. Alkaline degradation of the hemicelluloses. II. Monatsh. Chem. 84, no. 5: 888-900 (Oct. 15, 1953). [In German] *cf.* abstract below.

Details are given for the isolation and characterization of beechwood hemicelluloses (I). The factors leading to their alkaline decompositions were studied systematically. (IA) was isolated from wood (pre-extracted with neutral solvents) at room temperature by extraction with 4% sodium hydroxide and then suitably purified. Subsequently the fibrous residue was re-extracted with 24% sodium hydroxide, yielding (IB); the residue from this preparation was then re-extracted with 8% sodium hydroxide (under nitrogen) at about 100°C., giving (IC). The various (I) fractions showed relatively slight differences; their D.P.'s varied from 144 for (IC) to 153-155 for (IA) and (IB); $[\alpha]_D$ -84 to -86°. These results are in close accord with those reported by Husemann (*cf.* B.I.P.C. 10: 325). The following variables were studied: reaction temperatures, time of beating, pH, and concentration of sodium hydroxide. At the end of each experiment the hemicellulose recovery, the respective D.P. and $[\alpha]_D^{20}$, and the acids formed were determined quantitatively. Evidently the greatest effects were noted in the case of reaction temperatures and (to a somewhat lesser extent) the pH. The reaction time and the alkali concentration were apparently of minor importance. The effects of carrying out the digestion under nitrogen were also usually negligible. The higher the cooking temperature and the higher the pH, the less (I) was recovered, the lower was the D.P. of (I), and the more acid was formed in the reaction. Under the most drastic conditions [1.28 grams of (IA), heated at 190° for one hour with 50 cc. *N* sodium hydroxide] (IA) was completely degraded and acids corresponding to 117 cc. of 0.1 *N* hydrochloric acid/gram of (IA) were recovered. A brief outline of the analytical procedures of the chromatographic separation of sugars obtained by hydrolyzing (IA) are given; xylose was the principal component, and the uronic anhydride content amounted to about 11.7%. 12 tables, 4 diagrams, and 11 footnotes. L.E.W.

PREY, V., WALDMANN, E., KRZANDALSKY, W., and SWOBODA, H. Contribution to the study of the alkaline degradation of sugars. VI. Preliminary communication on the alkaline degradation of the hemicelluloses. Monatsh. Chem. 84, no. 1: 93-8 (Feb. 15, 1953). [In German]

The alkaline pulping of beechwood was studied with a view toward determining the components responsible for the formation of acid end products. Evidently the hemicelluloses are the principal precursors of the acids formed at 100 and at 160°C., giving rise to (uncharacterized) acids, volatile and nonvolatile with steam, and to very small amounts of neutral (unidentified) volatile substances. Lignin and α-cellulose from straw also contributed markedly to the formation of acids found in the spent liquors. Details are given for the preparation of the hemicelluloses and the isolation of straw lignin; the methods for determining total and volatile acids are outlined. 2 tables and 12 references. L.E.W.

CELLULOSE—OXYCELLULOSE

KAVERZNEVA, E. D. Transformations occurring during oxidation of cellulose. [U.S.S.R.] Communs. 13th Intern. Congr. Pure and Appl. Chem., Stockholm, 1953: 305-27; 328-51 (1953). [In Russian and French]

A review of the chemical reactions occurring during the oxidation of cellulose is presented. Especial attention is given to the formation of ketone groups, a field particularly studied by the author. Oxycellulose oxidized by sodium hypochlorite can be condensed with hydroxylamine and the resulting oxime reduced by metallic calcium in an aqueous medium to an amino-cellulose derivative. Hydrolysis of the latter gives a mixture of amino-sugars. That ketones are present in the original carbonyl-containing oxycellulose is indicated by several facts. First, if the oxycellulose is oxidized further with sodium hypoiodite at pH 9.3, converting aldehydes to carboxylic acids, and then subjected to the above scheme, primary amines are still obtained to the extent of 25-30% of the total nitrogen. The acetylacetone reaction for glucosamine is positive. Further evidence of α-hydroxyketones in the hypochlorite oxycelluloses is afforded by the fact that they give various tests characteristic of the ene-diol form, such as the reduction of Benedict's reagent (arsenophosphotungstic acid) to give a blue color. The ene-diol form is produced by heating with sodium carbonate. Analyses of some modified celluloses are given. Conversion of hydroxyketone to ene-diol occurs only at pH above 10.5, so that these groups do not interfere with iodometry of aldehydes at pH 9.3. Values for uronic acids (by decarboxylation) are often higher than those for total carboxyl (by calcium acetate) in oxycelluloses formed by acid or neutral hypochlorite, by hydrogen peroxide, or by nitrogen dioxide. The author explains this by the presence of lactones and carbonic acid esters. The presence of lactone groups is indicated by the formation of hydroxamic acids with hydroxylamine. A positive test is given by hypochlorite, hydrogen peroxide, nitrogen dioxide, and air-oxidized (in cuprammonium) oxycelluloses. Other evidence is also presented. The evidence for carbonic acid esters is the development of small amounts of carbon dioxide on treatment with cold 0.025 *N* sodium hydroxide for one hour. Such carbonic esters may be of importance as representing chemical "weak links" in oxidized cellulose. They are present in purified cotton cellulose (presumably bleached) to the extent of one/4000 glucose units. After oxidation with hypochlorite in neutral or acid medium, this has risen to one/600-1600 glucose units. A scheme of the mechanism of hypochlorite oxidation is presented to explain these findings, involving parallel oxidations of carbons 2 and 3 to ketone groups and of carbon 6 to an aldehyde. In acid medium, carbonyl groups formed oxidize further only in part. This explains the high copper number and the low methylene blue absorption. In alkaline oxidation, most of the aldehydes and of the hydroxyketones (in the ene-diol stage in the alkali) are oxidized further to carboxyl groups. The formation of dialdehydes as in periodate oxidation is not observed in hypochlorite oxidation, but

does occur in hydrogen peroxide oxidations. A review is also given of Golova's work on air oxidation in cuprammonium solution and of various studies dealing with the effect of oxidation on the properties of cellulose. The differences observed by Reeves in oxycelluloses from periodic acid and from hypochlorite are explained by the presence of ketone groups in the latter only. Rogovin's work on the effect of oxidation on subsequent acetylation is also reviewed. 9 tables, 11 figures, and 32 references. K.W.,Jr.

MELLER, ALEXANDER. Reduction of oxycelluloses by sodium borohydride. Chemistry & Industry no. 45: 1204 (Nov. 7, 1953); *cf.* B.I.P.C. 24: 11.

In a previous communication the author predicted that the resistance of certain oxidized celluloses to hot alkali solutions would be decreased by reduction with sodium borohydride in acid solution (conversion of lactones to aldehydes) but increased by reduction with the same reagent in alkaline solution (conversion of lactones or aldehydes to alcohols). These predictions are borne out by the reduction of periodate oxycellulose, dichromate oxycellulose, chlorited dichromate oxycellulose, and gluconic acid oxycellulose. In the case of the acid-reduced products, the carbonyls can be reoxidized to carboxyls with chlorous acid, producing the expected increase in alkali resistance. 1 table and 3 references. K.W.,Jr.

CELLULOSE—SORPTION

DANNIES, J. H. Phase diagram for cellulose-water. Melliand Textilber. 34, no. 10: 973-4 (October, 1953). [In German]

Air may be dried by cooling below the saturation point or by absorption. Cellulose can be used as a solid absorbent with advantage since the regeneration of the pulp can be done at low temperature, by spreading in the sun, for instance. A phase diagram is given where the heat content of the cellulose-water forms one axis and the absolute humidity of the atmosphere the other. On this scale are plotted the family of isotherms from −5 to 85°C., the curves of equal R.H. from 10 to 97.5% (and the limiting curve corresponding to condensation), and the curves of equal moisture regain from 1 to 32.5%. 1 table, 1 diagram, and 1 reference. K.W.,Jr.

CELLULOSE ESTERS

STAUDINGER, HERMANN, and EICHER, THEO. Macromolecular compounds. [385] Cellulose. [114] Cellulose acetates. Makromol. Chem. 10, no. 3: 235-53 (September, 1953). [In German; French summary] *cf.* B.I.P.C. 24: 10.

A comparison of cellulose acetates from linters and from wood pulp shows that the value of K_m, Staudinger's proportionality constant for viscosity and D.P., is equal to 7.0×10^{-4} (in acetone) for the linters acetate fractions and independent of D.P. For the acetates from pulp the value is not independent and varies from 8.2 to 9.6×10^{-4}. This is attributed to heterogeneity of the fractions, perhaps arising from the presence of other wood polyoses. The acetates were fractionated from acetone with water. 17 tables, 6 figures, and 30 footnotes. K.W.,Jr.

STAUDINGER, HERMANN, and EICHER, THEO. Macromolecular compounds. [387] Cellulose. [116] Cellulose triacetoacetate and the mixed ester of acetic and acetoacetic acid. Makromol. Chem. 10, no. 3: 261-79 (September, 1953). [In German; French summary]

Diketene reacts with cellulose or secondary cellulose acetate to form esters of acetoacetic acid. 8 tables, 6 figures, and 20 footnotes. K.W.,Jr.

THOMAS, JOHN C. Rapid acetylation of impregnated cellulose. J. Am. Chem. Soc. 75, no. 21: 5346-50 (Nov. 5, 1953).

Soluble, high-molecular-weight cellulose triacetates have been prepared in extremely short reaction times by the action of acetic anhydride, at temperatures above 90°C., on cellulose impregnated with certain combinations of compounds from aqueous solution and dried. For example, cotton linters impregnated with 38% of their weight of urea and 2% of their weight of ammonium sulfate reacted with excess acetic anhydride in one minute at 138° to give a soluble triacetate with a D.P. of 585. In the same system at 95°, acetylation was complete after 13 minutes, and a product with a D.P. of 720 was formed. Other compounds could be used in place of urea and ammonium sulfate. The presence of both types of impregnants was necessary, and structural requirements for active impregnants of each type were determined. 2 tables and 6 footnotes. E.S.

CELLULOSE ETHERS

SITCH, D. A. The methylation of cellulose with diazomethane, and some properties of the products. J. Textile Inst. 44, no. 10: T407-19 (October, 1953).

Comparative methylations of cotton, mercerized cotton, cuprammonium rayon, a powdery hydrocellulose, and a product obtained by grinding cotton in a ball mill, have shown that the degree of methylation achieved with etherial diazomethane decreases with increasing crystallinity of the cellulose material. Although methylation takes place most readily in the amorphous regions, x-ray examination has shown that it is not confined to these regions. Methylation of cellulose with diazomethane greatly increases its loss of weight on heterogeneous hydrolysis with acid. This increase is attributed partly to an increase in the amorphous fraction as a result of the methylation, but mainly to the effect of methoxyl groups in preventing crystallization of initially amorphous material during the hydrolysis process. Chromatographic separation of the methylglucoses produced by hydrolysis of a cellulose methylated with diazomethane has shown that this material contained mono-, di-, and tri-substituted glucose units. In the metaperiodate oxidation of a series of methylcelluloses prepared with diazomethane, an increase in the degree of methylation has been found to result in a decrease in the rate of the Malaprade reaction but an increase in the rate of the degradative overoxidation processes. A more highly methylated product (D.S. 2.7), prepared by the action of alkali and dimethyl sulfate, has also been found to be progressively oxidized by metaperiodate; oxygen consumptions exceeding one atom/chain unit have been observed, although the average number of α-glycol groups in this material cannot have exceeded 0.15/chain unit. Periodate oxidation does not provide a reliable means of determining the proportion of free α-glycol groups in the methylcelluloses studied. 2 tables, 5 figures, and 16 references. E.S.

CHEMICAL TESTING—CARBOHYDRATES

LAUNER, HERBERT F., and TOMIMATSU, YOSHIO. Rapid accurate determination of carbohydrates and other substances with the dichromate heat-of-dilution method. Anal. Chem. 25, no. 11: 1767-9 (November, 1953).

The method is based upon treatment of the organic material with potas-

sium dichromate and sulfuric acid. Under the conditions chosen, no external heating is necessary and the dichromate oxidation is complete within 10 minutes. The amount of dichromate used is found by potentiometric titration of the excess. The completeness of oxidation of various types of organic structures is discussed. 2 tables and 8 references. B.L.B.

CHEMICAL TESTING—CELLULOSE

KLEINERT, THEODOR N., and WINCOR, WILHELM. Determination of cellulose by an acid-dichromate method; a comparative study of methods. Tappi 36, no. 11: 507-9 (November, 1953).

Combustion of cellulose and hemicelluloses by means of dichromate-sulfuric acid with and without the addition of silver sulfate as a catalyst was studied. The silver sulfate addition did not improve the combustion values. Heating the combustion mixture of dichromate-sulfuric acid (55% sulfuric acid by volume) without the addition of silver sulfate only to boiling proved to be the most suitable procedure for practical purposes. When proceeding in this manner, the "practical" milliequivalent weight of cellulose is 6.797 mg. Exact values corresponding to about 100% of the theoretical value were obtained when using the wet-combustion method by means of a solution of potassium iodate in concentrated sulfuric acid as suggested by Strebinger (*cf.* Z. anal. Chem. 58: 97-114 [1919]). 3 tables and 15 references. E.S.

LAUNER, HERBERT F., and TOMIMATSU, YOSHIO. Rapid accurate determination of cellulose with the dichromate heat-of-dilution method. Anal. Chem. 25, no. 11: 1769-70 (November, 1953).

Cellulose can be determined rapidly and with slight error, in the presence of moisture and usual inorganic impurities, by oxidation with potassium dichromate. The heat-of-dilution method (*cf.* B.I.P.C. 24: 270-1) obviates the need for external heating, and a three-minute period after addition of the sulfuric acid suffices for oxidation of cellulose, starch, and glucose. 1 table and 10 references. B.L.B.

CHEMICAL TESTING—GASES

SEGAL, WILLIAM, and STARKEY, ROBERT L. Quantitative determination of methyl mercaptan, dimethyl disulfide, and dimethyl sulfide in a gas mixture. Anal. Chem. 25, no. 11: 1645-8 (November, 1953).

The gas containing the sulfur compounds is passed through a solution of mercuric cyanide and then through benzene. The mercuric cyanide completely absorbs the mercaptan, whereas dimethyl disulfide and dimethyl sulfide are removed by the benzene. The mercaptan is determined by weighing the insoluble mercuric dithiomethoxide formed, or by alternative procedures based upon iodometric analysis of the precipitate or titrimetric analysis of the filtrate. In the benzene solution the dimethyl disulfide is reduced to mercaptan, and the amount of mercaptan formed is determined titrimetrically after reaction with silver nitrate. The dimethyl sulfide is determined by titration of the hydrobromic acid liberated upon reaction with bromine. 1 table, 1 figure, and 11 references. B.L.B.

CHEMICAL TESTING—SULFITE WASTE LIQUOR

NEUMANN, FRITZ. Base titration in sulfite cooking acid and spent sulfite liquor with complexone. Das Papier 7, no. 21/22: 425-6 (November, 1953). [In German; English and French summaries] *cf.* B.I.P.C. 23: 479.

In the previous communication it was mentioned that the presence of organic substances from spent sulfite liquor may interfere with the titration of calcium (and magnesium) in cooking acid and spent sulfite liquor with complexone and Eriochrome black T indicator (or its mixtures). It has now been determined that this interference is caused by traces of heavy metals, copper in particular. A small amount (0.2%) of potassium cyanide added to the ammonia-ammonium chloride buffer solution (which will keep for at least two weeks) will render the interfering substances harmless. 1 table and 1 reference. E.S.

COLOR

ALLGEMEINE PAPIER-RUNDSCHAU. Green writing paper for the protection of the eyes. Allgem. Papier-Rundschau no. 11: 473-4 (June 5, 1953). [In German] *cf.* B.I.P.C. 24:15.

A German stationer has introduced copybooks for school children, the paper of which is dyed a light-green shade in place of the usual white (green HM-copybook). Half of the children of the school have been provided with the standard white and the other half with the light-green copybooks and the results will be evaluated after a certain period of time. The present article is printed on the light-green paper, which is claimed to be less tiring for the eyes, including those of the teacher who has to correct a stack of papers. Physiological and optical explanations are given. The fact is also mentioned that the use of green schoolboards is increasing. The observation has been made that 20% less errors are made in copying from green schoolboards than when the standard black boards are used. E.S.

FACHVERBAND DER LERNMITTEL-INDUSTRIE. White or green paper for school purposes. Allgem. Papier-Rundschau no. 18: 778-9 (Sept. 19, 1953). [In German]

The expert opinion of several oculists was sought with regard to the desirability of light-green in place of white paper for school copybooks. The unanimous opinion of two eye specialists is that there is no hygienic reason for substituting colored paper for the usual white sheets, provided that glare is eliminated. A glaring green light, for instance, is without doubt more harmful than a mild white one. Swedish schools which have experimented with green paper have again abandoned its use. White well-sized writing paper is considered the most suitable for school purposes. E.S.

COLORIMETRY

WURZBURG, F. L., JR. Color and color control in converting. Paper Trade J. 137, no. 20: 121-8 (Nov. 13, 1953).

The need for color control in the printing of boxboard and the degree to which the color must be controlled to insure maximum appearance are discussed; factors in package design, preparation for production, standardization, specification of color, light sources, colored materials, colorimetry and colorimeters, densitometry, and color order systems are covered. This is one in a series of industrial lectures on paper and paperboard converting presented at Western Michigan College. 12 figures. R.A.S.

CONTAINER INDUSTRY—LAWS AND LEGISLATION

PARKER, LEO. Legal tangles and court decisions. Fibre Containers 38, no. 10: 116, 118, 120 (October, 1953).

A number of recent higher-court decisions involving paper and board

manufacturers or packers are discussed, including verbal guarantees, damage for breach of contract, written contracts, tax liability, payment of freight and lawyer's fees, and responsibility of the company for an injury inflicted by a fellow employee. E.S.

CORROSION

ANON. "Operation mothball" thermoplastic coating protects stored plates. Boxboard Containers 71, no. 731: 18-19 (November, 1953).

Engraving plates in a folding box plant are protected against corrosion by a transparent thermoplastic coating of Eronel Thermodip 910. The engraving can be read easily through the transparent coating and the thermoplastic strips off in one piece when the engravings are needed. 6 illustrations. R.A.S.

BUKOWSKY, H. E. Port Townsend digesters; corrosion developments and how they were met. Pulp & Paper 27, no. 9: 55-8 (Aug. 10, 1953).

The author traces the development of corrosion in the digesters at the Port Townsend mill of Crown Zellerbach Corp. and discusses the methods used by the company in seeking to eliminate the problem. The original digesters used were free from corrosion until chrome ore-lined recovery units were installed to replace the original brick-lined recovery furnaces; then the protective scale in the digesters began to disappear. The corrosion became noticeably greater with the replacement of Douglas-fir or western hemlock with western red cedar, necessary because of the shortage during World War II. Stainless steels to line the digesters were considered first for solving the problem; stainless steel No. 347 with columbium was used to make a 7/64-inch lining which was welded to one-inch carbon steel plate to form a new digester. However, serious stress corrosion developed at a much accelerated rate, so that it became necessary to overlay with Inconel strip lining the upper fourth of the vessel. Continued tests for the most suitable lining material showed Inconel to be more corrosion resistant, so the original digesters were repaired with this material and new digesters ordered with this lining. The Inconel-lined digesters were installed and corrosion rates were recently determined as about 0.008 inch/year in the vapor zone with practically no corrosion anywhere else. Processes used in handling operations necessary in removing and repairing the digesters are described. 5 figures. R.A.S.

DECULATOR PROCESS

ANON. Crossett additions; its Deculator and other improvements. Pulp & Paper 27, no. 9: 61-2, 64 (Aug. 10, 1953).

In listing new equipment and recent improvements in machinery at Crossett, Ark., particular reference is made to the installation of a Deculator on a high-speed kraft Fourdrinier paper machine equipped with a pressure headbox; the resulting advantages include fewer web breaks, reduced foam conditions, and increased over-all machine efficiency. 7 figures. E.S.

DUSKIN, A. W., and JENKINS, W. B. The Deculator on a kraft paper machine. Tappi 36, no. 11: 490-2 (November, 1953); *cf.* B.I.P.C. 21: 463.

The Deculator for deaerating dilute paper stock before the headbox is described. A discussion is given of results obtained from a recent installation on a high-speed kraft paper machine equipped with a pressure headbox. Improvement in formation, prevention of foam, increased machine efficiency,

increased drying efficiency, smaller basis-weight variations in the machine direction, improvement in sheet smoothness, and small maintenance costs are the general results noted. 5 figures. E.S.

DIE-CUTTING

GUT, H. How should steel-rule dies be ordered? Allgem. Papier-Rundschau no. 20: 866-8 (Oct. 20, 1953). [In German]

Directions with examples are given for the correct ordering of steel-rule dies. 4 figures and 1 footnote. E.S.

DIELECTRICS

BIRDSALL, H. A. Insulating films. Digest of the Literature on Dielectrics (Natl. Research Council) 16: 80-8 (1952, publ. 1953); *cf.* B.I.P.C. 23: 325.

The literature on insulating films which appeared in 1952 is summarized; references on paper, fabrics, and yarns composed of cellulose and other fibers as well as plastic films are included. The information is subdivided under the headings: general, thermal stability and aging, capacitors, laminates, sheet insulation from noncellulosic fibers, and plastic sheet insulation. 51 references. R.A.S.

DISINFECTION AND DISINFECTANTS

CHAMBERS, CECIL W., CHAMBERS, LESLIE A., and KABLER, PAUL. New colloidal silver disinfectant; effect of environmental factors on bactericidal action. Ind. Eng. Chem. 45, no. 11: 2569-71 (November, 1953); *cf.* abstract below.

This report is designed to supplement the paper on bactericidal action of Movidyn with data on the effect of environmental variants on the material in question. Under favorable conditions (pH 8.5-9 and temperature 22-25°C.) Movidyn was an effective bactericide in concentrations as low as 0.1 p.p.m., whereas at pH 6-6.5 higher concentrations of disinfectant were required. At 2-5° the disinfecting action was considerably reduced. The results from this investigation indicate that the long contact times required, as well as the reduced activity at low temperatures, would be limiting factors in many situations. 5 tables and 1 reference. E.S.

HOFFMAN, ROBERT K., SURKIEWICZ, BERNARD F., CHAMBERS, L. A., and PHILLIPS, CHARLES R. Bactericidal action of Movidyn. Ind. Eng. Chem. 45, no. 11: 2571-3 (November, 1953); *cf.* B.I.P.C. 24: 52.

Laboratory-prepared samples of Movidyn, a new colloidal silver disinfectant now commercially available, were tested for possible applications in various fields. The sample of Movidyn reported on was active at extremely high dilutions. The time required to kill 99.99% of the various test organisms with a 1/20,000,000 dilution of the preparation was 1.5 hours for *S. marcescens;* 3.5 hours for *S. typhosa;* 11.5 hours for *M. pyogenes* var. *aureus,* and 12 hours for *E. coli.* Tests were performed at several different temperatures and a temperature coefficient was calculated. The silver is present in a considerably more active form than that of ionic silver, as shown in comparative tests between Movidyn and silver nitrate on *E. coli.* As a solid it does not disappear from water as a gaseous constituent would do, so its residual effect does not rapidly disappear. Moreover, what losses do occur in suspension appear to result from its adsorption on the walls of the container imparting a bactericidal residual that persists when fresh untreated water is added to

the container, even though the container is well washed and rinsed between tests. There was evidence that its effect was bactericidal, rather than the bacteriostatic effect often evidenced by certain heavy metal disinfectants, as shown by the inability of sulfhydryl compounds, thiosulfate, chloride, or organic matter to neutralize the product and allow treated organisms to multiply. 1 table and 5 diagrams. E.S.

DYES AND DYEING

CORNELY, BERTHOLD. What factors must be considered in brightening and white dyeing of filled papers containing groundwood pulp? Allgem. Papier-Rundschau no. 18: 785-7 (Sept. 19, 1953). [In German]

The inherent structural two-sidedness of paper increases in the presence of fillers, because they are not deposited uniformly on the wire and felt side of the sheet. Brightening with white pigments (such as zinc or titanium dioxide) alone will not produce the optimum result, because a satisfactory matching of the tint of both sides of the sheet is not possible. A great improvement of the yellowish hue of bleached mechanical and chemical pulps can be obtained by neutralization with a suitable blue or violet and a red dye. Pitfalls in the selection of dyes and their application are described and directions for the prevention of mottled effects are given, including the use of synthetic mordants, colloidal dyestuff solutions, and combinations of basic and acid dyes of similar shades and correct affinity for the cellulose and the filler. Examples of such combinations are given. The simultaneous use of basic dyes and organic or inorganic blue pigments also produces good results; however, this procedure is usually too expensive for printing and writing papers containing groundwood pulp. E.S.

ECONOMICS, INDUSTRIAL

ANON. Collection of economic data for long-term planning. Indian Pulp and Paper 8, no. 3: 184-5 (September, 1953).

The procedure used by the National Sample Survey in their six rounds of investigation to collect data bearing on the economic and social life in India is discussed. R.A.S.

EMPLOYMENT MANAGEMENT

PARROTT, REX. Personnel selection must be realistic. Paper Mill News 76, no. 47: 18, 20 (Nov. 21, 1953); Southern Pulp Paper Mfr. 16, no. 12: 54-6 (December, 1953).

Background information which should be provided before the person in charge of personnel selection interviews an applicant is discussed and includes the applicant's education, work record, physical condition and past health record, and results from the testing program. R.A.S.

ENGINEERING

AMBRIDGE, D. W. The urgent needs of the industry. Tappi 36, no. 11: 14A, 16A, 18A (November, 1953); Pulp Paper Mag. Can. 54, no. 13: 107-8 (December, 1953).

The author draws attention to the dangerous waste of precious engineering talent in the pulp and paper industry and suggests greater standardization of equipment as a partial remedy. E.S.

FIBERS

BALLY, W., and TOBLER, F. Hard fibres. Ciba Rev. no. 99: 3538-9, 3541-9, 3551-5, 3557-9, 3561-3, 3565-70 (August, 1953).

The authors discuss the economy, botany, regions and methods of cultivation, discovery and history, structure, and uses of hard fibers, such as agaves (sisal, henequen, zambara, maguey, and Mauritius hemp), abaca (*Musa textilis*), New Zealand flax (*Phormium tenax*) (Bally), and members of the *Bromeliaceae* family (especially caroa and silk grass or wild pineapple). Methods of extraction of leaf fibers are also reviewed (Tobler). 1 table, 29 figures, 1 map, and 42 references. R.A.S.

FILTRATION

INGALLS, ROBERT, and AXTELL, OLIVER. Filtration through paper. Tappi 36, no. 11: 509-12 (November, 1953).

The effect of the beating time of the stock upon the filtration efficiency of the sheet was investigated for hardwood soda pulp. With whole-pulp stocks, two groups of experiments were made. In one, the stock was given no treatment other than beating; in the other, the beaten stock was dried and subsequently rewetted in order to form the sheet. In the first group of experiments, filtration efficiency decreased 33% and tensile strength increased 67% as beating time increased from 15 to 90 minutes. In the second group, however, neither filtration efficiency nor tensile strength was affected by beating time. A third group of experiments was made with stocks composed of the 24-50, 50-90, and 90-200-mesh fractions of pulp. In this group the beaten stocks were dried and subsequently rewetted. As in the case of whole pulp given similar treatment, the filtration efficiency of any particular fraction was independent of beating time. The filtration efficiency of the 90-200-mesh fraction was 54% lower than that of the 24-50-mesh fraction. 1 table and 12 diagrams. E.S.

INGMANSON, W. L. Filtration resistance of compressible materials. Chem. Eng. Progr. 49, no. 11: 577-84 (November, 1953).

An equation relating filtration resistance with important physical properties of compressible materials has been developed. The basic assumption in the derivation was that the classical Kozeny-Carman equation, designed for use in porous-bed permeability studies, would apply to the dynamic case of a constant-pressure filtration, provided that it was written in the differential form and properly integrated. The equation was corroborated by experimental data obtained in static (preformed bed) and dynamic (filtration) studies with nonflocculated beds of wood pulp fibers. It was concluded that the average specific filtration resistance in the ranges of applicability of the Kozeny-Carman equation is directly proportional to the square of the specific surface of the bed particles, and is related to the frictional pressure drop across the bed by a complex porosity function, which is dependent upon the effective specific volume and the compressibility of the material in question. 5 tables, 6 diagrams, and 23 references. E.S.

FIRE RESEARCH

KINGMAN, F. E. T., COLEMAN, E. H., and RASBASH, D. J. The products of combustion in burning buildings. J. Appl. Chem. 3, no. 10: 463-8 (October, 1953).

The variations in the state of the atmosphere during a fire have been investigated in the course of tests in which two full-scale houses were completely burned out. The analysis of the atmosphere (in rooms remote from the point of origin of the fire) showed that, in the early stages of the fire, the combustion of the wood and other cellulosic constituents (the houses were

identical, except that the first was lined internally with fiber insulating board only, and the second with the same fiber-insulating board covered with a ⅜-inch layer of plaster board) of the house and furnishings was practically complete; in the later stages, however, the oxygen supply was inadequate and resulted in the appearance of the products of destructive distillation and the smoke-logging of the room. Because of such variations in the atmosphere with time it is difficult to determine from laboratory-scale experiments the probable composition of the atmosphere in burning buildings. 4 tables, 10 diagrams, and 5 references. E.S.

FOAM

BROWN, A. G., THUMAN, WILLIAM C., and MCBAIN, J. W. The surface viscosity of detergent solutions as a factor in foam stability. J. Colloid Sci. 8, no. 5: 491-507 (October, 1953).

A rotational viscometer, capable of providing rheological data for surface films on solutions of surface-active agents, has been developed and is described in detail. Surface viscosity data have been obtained with a group of detergents and detergent mixtures specially selected to illustrate the role of surface viscosity in the stability of the foams obtained from the solutions by beating. Foams of highest stability appear to be produced from solutions showing appreciable surface viscosity; solutions yielding foams of very poor stability show very low surface viscosity. Some foams of intermediate stability which rapidly become thin and tenuous, although relatively persistent in total volume, appear as exceptions to the rule. It is suggested that the change in specific surface, in addition to the change in foam volume, with time is necessary to characterize properly the processes taking place. Finally, it is suggested that detergents yielding foams of high foam stability consist of two or more compounds, one of which has high solubility and provides a reservoir of surface active material of poorly developed coherence; and the other of which, though much lesser in amount and also less soluble, provides the necessary coherence in the mixed surface film. 3 tables, 8 diagrams, and 22 references. E.S.

BROWN, A. G., THUMAN, WILLIAM C., and MCBAIN, J. W. Transfer of air through adsorbed surface films as a factor in foam stability. J. Colloid Sci. 8, no. 5: 508-19 (October, 1953).

A simple floating bubble method for determining the permeability of adsorbed surface films to air is described. Data are presented for a selected group of pure detergents and detergent mixtures, and factors affecting the interpretation of the data in terms of foam stability are discussed. High foam stability depends on the adsorbed surface film having low permeability to air and high surface viscosity, and both of these effects may be the result of special solute pairs. Measurements of permeability and of surface viscosity provide valuable information regarding interreactions in adsorbed monolayers and, in turn, indicate the possibility of relating foam stability in a fundamental way to the chemical structure and composition of the detergent. 3 tables, 7 diagrams, and 9 references. E.S.

PIERCE, DAVID E. [Foam problems] Ind. Eng. Chem. 45, no. 11: 79-80A, 82A (November, 1953).

The rate at which liquids may be boiled (disengaging velocity) (I) is often controlled by foaming; (I) may be increased, when foam is decreased by antifoaming agents or some other means. Experiments are described which show that when heat is applied to kettles near the top by welding a

small jacket around the wall and circulating hot oil through it, the foam could be controlled and the batch size in the kettle increased very substantially above the original quantity. The effect is much more pronounced in metals of low conductivity (nickel) than in those with a high one (aluminum). 2 diagrams. E.S.

FOLDING BOXES

HALL, WILLIAM D. Folding cartons. Paper Trade J. 137, no. 20: 147-59 (Nov. 13, 1953).

Information about folding cartons is quite extensively summarized, giving facts on the historical background, size and growth of the industry, functions and characteristics of the cartons, materials used in manufacture, grades of folding boxboard, terms and definitions, and production, particularly emphasizing the converting operations. An illustrated nomenclature chart prepared by the Folding Paper Box Association shows 17 styles of folding boxes. This is one in a series of industrial lectures on paper and paperboard converting presented at Western Michigan College. 3 tables and 24 figures. R.A.S.

FORESTS AND FORESTRY

FORREST, LEN J. Far west forest program; Rayonier stresses seven points for good management. Pulp & Paper 27, no. 12: 90, 92-3 (November, 1953).

The program set up by the company for reasonable and practical management of land owned by private concerns, state and federal governments, and Indian nations is described. Seven basic points are outlined which are designed to perpetuate sound cutting practices, fire prevention, insect and predator control, and generally good forestry practices. 5 illustrations. R.A.S.

GIBSON, J. MILES. The University of New Brunswick forest. Pulp Paper Mag. Can. 54, no. 11: 180, 182, 186, 190, 192 (October, 1953).

An account is given of the history of the forest, its origin, and its uses; the forest is a teaching laboratory for university students and an operating forest supplying products needed. 1 table. R.A.S.

POMEROY, KENNETH B. Research in tree improvement at Lake City. Tappi 36, no. 11: 147-50A (November, 1953); *cf.* B.I.P.C. 24: 21.

Tree improvement is a long-term undertaking which can be accomplished progressively in several stages of varying complexity. Work and results obtained to date at the Lake City, Fla. research center of the Southeastern Forest Experiment Station in the genetic improvement of forest trees are discussed. The article is similar in scope, but more extensive than the previous one. 7 references. E.S.

FORESTS AND FORESTRY—EDUCATION

CARTER, R. T. [Moderator] Power saw training; a panel discussion. Pulp Paper Mag. Can. 54, no. 11: 154-6, 159-60, 163-4, 166, 170 (October, 1953).

A panel discussion on power-saw training presented at the Annual Meeting of the Woodlands Section of the Canadian Pulp and Paper Association consisted of the following authors and topics: Pond, T. M. Training power saw operators, p. 154-5; Maurice, G. U. Power saw breakdowns, p. 156, 159;

Kerr, L. G. Power saw manuals, p. 159-60; Stewart, A. M. Films in power saw training, p. 160, 163; Jefferson, H. H. Power saw training program of APA, p. 163-4; and Anon. Summarization of discussion, p. 166, 170.
R.A.S.

GAS TURBINES

WILSON, W. B. Applications for the combustion gas turbine in the pulp and paper industry. Pulp Paper Mag. Can. 54, no. 11: 139-44 (October, 1953); *cf.* B.I.P.C. 22: 578.

The article contains a similar description of the available gas turbines and possible applications in pulp and paper mills as the previous reference. 13 figures. E.S.

HARD WOODS

CHITTENDEN, A. E., MORTON, D., and PICKERING, G. B. Batai wood (*Albizzia falcata* L.) from Malaya. Colonial Plant and Animal Products (London) 3, no. 3: 214-20 + 4 plates (1952-3).

A chemical analysis of airdry chips of bataiwood (I) gave 72.5% holocellulose, 55.6% Cross and Bevan cellulose, 46.2% α-cellulose from the holocellulose, and 24.7% lignin. The length of the ultimate fibers (mean 1.18 mm. ± 0.03%) is of the same order as those normally observed in tropical hardwoods, although the diameter is rather greater and the cell-wall thickness is smaller than the normal range of these timbers. Sulfate pulping experiments were made under conditions approximating those employed in commercial practice; a pulp yield of 51% was obtained under optimum conditions. Papers made from these pulps compare very favorably with those made from coniferous kraft pulp, although the tear factor is lower. (I) pulp by itself would probably make a reasonably good kraft paper; its tearing strength, however, would be improved by the addition of a small proportion of coniferous kraft. Even with the lightest-colored pulp and a four-stage bleach, a bleached pulp of a really good white could not be obtained. A high chlorine consumption was avoided and the loss in yield on bleaching was not excessive. It is therefore possible that the pulp may also be used for low-grade printings or white wrappings. An unfortunate feature of all (I) pulps, including the bleached one, is the presence of very small black specks in the finished paper. 6 tables and 4 figures. E.S.

HISTORY

ANON. The area around Düren and the paper industry. Allgem. Papier-Rundschau no. 11: 460-2, 464-6, 468-72; no. 14: 599 (June 5, July 20, 1953). [In German] *cf.* B.I.P.C. 24: 22.

This is a continuation of the previous article in which a number of fine paper mills, converting plants, and a felt mill in that area are described. 15 figures. E.S.

GACHET, HENRI. Raw materials in papermaking; past and present worries. Papetier 7, no. 9: 80-2 (September, 1953). [In French]

Following a brief review of the recurrent difficulties for supplying the paper industry since its earliest beginnings with a sufficient amount of raw material, incidents are recorded like the sale of mummy cloth by marauding Bedouins or the maritime shipment of rags from one French province to another during prohibition of exports; after once leaving the French soil, the rags never returned to it. In conclusion, an old document written in

1825 by the Chevalier de Valmer, a retired sea captain, on a beautiful paper still in a perfect state of preservation is mentioned, in which he complains about the poor conditions of the paper produced at that time and petitions to the minister of the Department of Interior that a cheap fabric be stipulated for burying the dead, thereby saving the large amount of beautiful linen needlessly wasted on shirts and shrouds in graves. An anonymous hand wrote across the suggestion: "File with documents on the improvement of paper," where it rested until found by the present writer who returned it to its place. E.S.

INSTRUMENTATION

WALTER, LEO. Solving control problems in the paper mill. Paper Ind. 35, no. 8: 888-90 (November, 1953).

The author describes the solution of several control problems encountered in the pulp and paper industry, including the control of bar-screen cleaning, the drier section, a typical bleach plant, and pH, and the use of centralized graphic control panels. 6 figures. E.S.

LABORATORIES

ANON. St. Regis completes new bag research and development lab. Paper Trade J. 137, no. 20: 63-4, 66 (Nov. 13, 1953); Paper Mill News 76, no. 48: 5 (Nov. 28, 1953); Paper Ind. 35, no. 9: 1019-20 (December, 1953); Southern Pulp Paper Mfr. 16, no. 12: 30, 32, 34 (December, 1953).

The facilities of the new laboratory devoted to multiwall bag research and development at Pensacola, Fla. are described. The new laboratory consists of a conversion-material, chemical, and bag-testing section, and a high humidity room. A special room contains the mechanical equipment which serves the laboratory installations. 2 illustrations in the first three references and 6 in the fourth. E.S.

LIGNIN

FREUDENBERG, KARL, and DIETRICH, HEINZ. The synthesis of *d,l*-pinoresinol and other experiments in connection with lignin. Chem. Ber. 86, no. 9: 1157-66 (Oct. 9, 1953). [In German] *cf.* B.I.P.C. 23: 887.

d,l-Pinoresinol (I) been synthesized with dehydrodiferulic acid as a starting material. (I) has been found to be a secondary building stone in lignin formation. When (I) is treated with a redoxase, isolated from mushrooms, a dehydrogenation polymer (II) is obtained which, like other dehydrogenation polymers, is soluble in acetone. Whereas (I) on oxidation with nitric acid gives bis-hydroxymethylsuccinic acid dilactone (III), (II) no longer gives (III). Irradiation of coniferyl alcohol in water solution at pH 5 with sunlight for 17 days (or in a quartz vessel with a mercury lamp for 26 hours)—while oxygen is passed through the solution—gives dehydrogenation products even in the absence of enzymes. Several derivatives of (I) have been prepared and the ultraviolet absorption curves of some of the compounds are given. 3 figures and 15 footnotes. F.E.B.

RICHTZENHAIN, HERMANN, and ALFREDSSON, BO. *Cis-* and *trans*-2,3-dimethoxy-α-phenylcinnamic acid. Acta Chem. Scand. 7, no. 8: 1173-6 (1953). [In German]

Condensation of *o*-acetylvanillin with phenylacetic acid gives a mixture of 3-phenyl-8-methoxycoumarin (I) and *trans*-2-aceto-3-methoxy-α-phenylacetic acid (II). (I) is formed by simultaneous cyclization of *cis*-(II). Methylation

of (I) and (II) with dimethyl sulfate and 30% sodium hydroxide at 70°C. gives *cis-* and *trans-*2,3-dimethoxy-α-phenylcinnamic acids, of which the methyl esters have also been prepared. The ultraviolet absorption curves of these compounds are given. 2 figures and 5 references. F.E.B.

RICHTZENHAIN, HERMANN, and ALFREDSSON, BO. The degradation of lignin and lignin model compounds with hypochlorite. I. Acta Chem. Scand. 7, no. 8: 1177-85 (1953). [In German]

The hypochlorite (I) consumption of lignin and of a series of lignin model compounds in alkaline solution at various temperatures has been determined. This consumption takes place in two steps: a very fast reaction and a much slower one. At 95°C. lignosulfonic acid, alcohol lignin, native lignin, and hydrochloric acid lignin consume quite rapidly about 8 moles of (I)/lignin building stone. Thiolignin under the same conditions consumes 10-11 moles of (I). The ultraviolet absorption curves of the lignin preparations, taken after consumption of various amounts of (I), indicate that in the oxidized lignins aromatic ring systems have been degraded to a large extent. Methylation of the lignin retards the degradation and decreases the (I) consumption. The oxidation of a large number of phenols with free and etherified hydroxyl groups shows that only those phenols which have free hydroxyl groups are readily decomposed. The rapid degradation of lignin preparations which contain only few free phenolic hydroxyl groups is explained by the liberation of originally etherified phenolic groups during the degradation. 1 table, 5 figures, and 13 references. F.E.B.

LIGNIN—THIOLIGNIN

ZENTNER, THOMAS G. A study of the reaction products of lignin model compounds and sodium hydrosulphide. Tappi 36, no. 11: 517-23 (November, 1953).

A number of lignin model compounds have been reacted with an alkaline sulfide reagent under conditions similar to the kraft cook. In addition to the guaiacyl nucleus, the compounds contained four types of functional groups: the carbonyl group, the conjugated double bond, the ether linkage, and the aliphatic hydroxyl group. Of the different functional groups, only the hydroxyl group reacted to form a sulfur derivative. Small yields of demethylated products were isolated from the experimental cooks of all model compounds containing a carbonyl group. The conjugated double bonds of three different α,β-unsaturated ketones were hydrolyzed by the action of the cooks. Cleavage of an ether linkage of one model compound was accompanied by a reducing reaction. The results point to the possibility that hydroxyl groups in lignin react during the kraft cook to form thiolignin. 3 tables and 9 references. E.S.

LOADING AND UNLOADING—CARS

ANDERSON, C. R. Shipping damage preventative measures. Tappi 36, no. 11: 141-3A; discussion: 143A (November, 1953).

Shipping hazards present during transportation in railroad cars and efforts for overcoming them are reviewed. E.S.

LUBRICATION AND LUBRICANTS

WHITE, R. B. Lubrication in the modern paper mill. Paper Ind. 35, no. 8: 876-9 (November, 1953).

The author discusses the correct application of the modern improved grease, oil, or multipurpose lubricants to stock-preparation machinery, the

paper machine proper, calenders, and gear drives, with particular emphasis on maintenance practices and training of competent personnel. 9 illustrations. E.S.

MACHINERY

ANON. Three quarters of a century at the service of the paper industry. Allgem. Papier-Rundschau no. 11: 474-7 (June 5, 1953). [In German]

To commemorate the 75th anniversary of the Jagenberg-Werke A. G. in Düsseldorf, Germany, a brief history of the development of the firm, with particular reference to the construction of papermaking and converting machinery, is presented. 6 illustrations. E.S.

MACHINERY—BOOMS

KENNEDY, R. The economical construction of safe pulpwood holding grounds. Pulp Paper Mag. Can. 54, no. 11: 172; discussion: 172, 174, 176, 178 (October, 1953).

The author discusses the present status of Project RC-12 of the Pulp and Paper Research Institute of Canada, whose objective is the economical construction of safe pulpwood-holding grounds. R.A.S.

MACHINERY—CHESTS

ALLIS-CHALMERS MANUFACTURING COMPANY. A-C introduces new "Side-Flo" unit for paper stock chests. Paper Mill News 76, no. 48: 9 (Nov. 28, 1953); Southern Pulp Paper Mfr. 16, no. 11: 78 (November, 1953).

To eliminate the channeling effect in stock chests—i.e., the tendency of the stock to stick or hang to the sides of the chest so that discharge takes place from the bottom directly below the buildup and dead pockets are formed on the walls—a new "Side-Flo" unit has been introduced consisting of a motor and coupling outside the chest and an impeller mounted on the entering suction. This impeller throws the stock to the outer chest walls and causes a more uniform discharge from the entire cross-sectional area. 2 figures in the first and 1 in the second reference. E.S.

MACHINERY—CONVERTING MACHINERY

BIAGOSCH, HEINRICH. Advances in the construction of bending and scoring machines. Allgem. Papier-Rundschau no. 19: 820-2; no. 20: 873-5 (Oct. 5, 20, 1953). [In German]

New constructions of German bending and scoring machines to be used in conjunction with modern high-speed converting machinery are described. 19 figures. E.S.

S&S CORRUGATED MACHINERY COMPANY, INC., *Brooklyn, N.Y.* S&S partition assemblers. Fibre Containers 38, no. 10: 120, 122 (October, 1953).

The assembler is a semiautomatic device which inserts the transverse partition blanks by power into the longitudinal blanks which are manually fed by the operator. The machine consists essentially of a table over which a chain-driven feed slat rides which conveys the longitudinal pieces, and a pneumatically driven vertical kicker which inserts the transverse pieces at spaced intervals into the steadily advancing nest. 1 illustration. E.S.

MACHINERY—CUTTERS

FINCKE, KARL. Photoelectric regulation for cross cutters and multicolor printing machines. Allgem. Papier-Rundschau no. 11: 478-9 (June 5, 1953). [In German]

A photoelectric web regulator for the accurate cutting of printed material developed by DURAG Apparatebau, Hamburg, Germany is described. 4 diagrams. E.S.

MACHINERY—DOCTORS

ANON. The cleaning of the surface of Yankee cylinders. Svensk Papperstidn. 56, no. 19: 766 (Oct. 15, 1953). [In Swedish]

A brief description of the CATO scraper roll (I) is given which is designed to keep the surface of the Yankee drier clean during operation. (I) consists of a number of felt disks impregnated with sodium silicate to impart a certain stiffness and installed on an oscillating shaft, preferably at the bottom of the Yankee drier. If the cleaning action of (I) alone is too mild, it may be combined with that of an oscillating doctor (Vickery). If the results are still not satisfactory, it indicates a defective cylinder surface. This can be improved by attaching a wooden doctor blade covered with an abrasive cloth to the Vickery doctor and using this assembly until a good finish is restored to the drier surface. 3 figures. E.S.

MACHINERY—DRYERS

SMITH, STANLEY F., and ATTWOOD, B. W. Paperboard drying investigation by means of an experimental drying machine. Tappi 36, no. 11: 481-90 (November, 1953); *cf.* B.I.P.C. 21: 403.

An experimental drying machine is described on which moist paper or paperboard may be dried by a process closely matching that which takes place on the cylinder driers of paper and board machines. The main variables of drying, 11 in all, are under close control, and the effect on drying rate or sheet properties by varying each independently may be studied. The performance of almost any proposed drier part design may be evaluated. Preliminary studies of the effect of drier felt tension, air conditions in pockets of driers (saturation and velocity over sheet), spacing of cylinders, cylinder diameter, machine speed, and types of drier felt on drying rate are described. The possibilities of the machine as a research tool are discussed, as well as the information the preliminary results throw on the mechanism of drying. Methods of measurement of sheet and felt tensions on paper or board machines and a method used for measuring air conditions in the pockets of drier parts of board machines are described. 7 tables, 12 figures, and 8 references. E.S.

MACHINERY—KNIVES

COLEMAN, AL. Paper-cutting knives. Graphic Arts Monthly 25, no. 11: 172, 174 (November, 1953).

The construction of a paper cutting knife, the maintenance of standard tempers or hardness, and the rule for determining cutting bevels for paper knives are described. R.A.S.

MACHINERY—PACKAGING MACHINERY

ANON. Ice-cream-sandwich success. Modern Packaging 27, no. 3: 112-13, 228 (November, 1953).

A new machine being used by Swift & Co., Brooklyn has combined a two-machine operation, making ice cream sandwiches on one machine and then transferring them to an overwrapping machine, into a continuous operation providing efficiency, low cost, and the highest standards of sanitary handling. 3 illustrations. R.A.S.

MACHINERY—PAPER MACHINE

ANON. Korsnäs AB's new paper machine. Svensk Papperstidn. 56, no. 19: 764 (Oct. 15, 1953); World's Paper Trade Rev. 140, no. 22: 1627 (Nov. 26, 1953). [In Swedish and English]

A brief description of the new 207-inch Fourdrinier paper machine built by Karlstads Mekaniska Werkstad for an annual output of approximately 40,000 metric tons of kraft paper is given. The machine room is provided with an intermediate space, 2 m. in height, between its ceiling and the outside roof. This serves as a ventilation channel through which warm air is blown over and under the paper machine. 2 illustrations. E.S.

MACHINERY—PAPER MACHINE—EXPERIMENTAL

CARLTON, A. C. Papermaking. J. Franklin Inst. 256, no. 5: 469-70 (November, 1953).

The history of the paper industry and the lack of sufficient raw materials are sketched briefly; the scale-model Fourdrinier machine on display at the Franklin Institute is described. 1 illustration. R.A.S.

PARSONS & WHITTEMORE, INC., *New York*. Midget Fourdrinier paper machine introduced by Parsons & Whittemore. Paper Mill News 76, no. 47: 22 (Nov. 21, 1953).

A new experimental paper machine with a 9-inch trim which offers substantial savings in furnish required has been introduced in the United States by the company. It is of a quality comparable to a full-size Fourdrinier and requires only one operator and 2.5 kw. power consumption. Over-all dimensions are 10 feet 6 inches long, 2 feet 8 inches wide, and 4 feet 6 inches high. 1 illustration. E.S.

MACHINERY—PUMPS

KARASSIK, IGOR J., and CARTER, ROY. Centrifugal pumps . . . Paper Ind. 34, no. 11: 1358-60 (February, 1953); 35, no. 3: 337-40; no. 5: 560-3; no. 6: 672-4; no. 7: 794-6; no. 8: 891-3 (June, August-November, 1953); *cf.* B.I.P.C. 23: 336.

The 1953 installments in the series of articles on centrifugal pumps treat the following subjects: Pump control, p. 1358-60 (February, 1953); Protective controls, p. 337-40 (June, 1953); Priming, p. 560-3 (August, 1953); Installation, p. 672-4 (September, 1953); Operation of centrifugal pumps, p. 794-6 (October, 1953); and Maintenance of centrifugal pumps (section I), p. 891-3 (November, 1953). Numerous illustrations are included in the text; additional installments will be published in 1954. R.A.S.

MACHINERY—REFINERS

TURNER, H. DALE. Evaluation of refiner-plate designs used for experimental processing of hardboard stocks. Tappi 36, no. 11: 513-17 (November, 1953).

The effects of dissimilar plate designs used in a disk refiner for processing hardboard pulp upon stock drainage time, board strength, and energy con-

sumed in milling the stock were investigated by means of a 5-h.p. single-rotating-disk attrition mill. Experimental data involving three plate designs and various milling conditions are presented in tabular and graphical form. The ratio of hardboard bending strength to energy consumed in milling the stock, herein defined as the energy index, is a significant measure of plate performance. This index is essentially constant for a single-plate design throughout a wide range of pulp quality, but dissimilar designs may show index values differing by as much as 400%. The effect of plate rotation direction upon stock drainage time and board strength is significant and measurable. The effect of plate design on drainage time is large; a range of 300% in drainage time was observed for equal-strength boards made from pulps which were refined with dissimilar disk patterns. 1 table, 7 figures, and 12 references. E.S.

MACHINERY—SCREENS

FINK, J. E. What cooks with chips? Pulp & Paper 27, no. 11: 114, 116 (October, 1953).

The operation and efficiency of two types of vibrating chip screens are compared, i.e., horizontal (I) and inclined (II) screens. Given the same set of conditions, the capacity of both types will be the same; the problem of choosing either (I) or (II) must be answered on the basis of space requirements, initial cost, and maintenance. (I) requires less head room than (II), whereas (II) requires less floor space; either type can be floor-mounted or suspended from an overhead structure. (II) is lower in initial cost than (I). Normal maintenance of both requires only proper lubrication; a spare mechanism can be installed on (I) in case of repair and operation be resumed immediately, whereas (II) must usually be repaired in place. Average daily production of wood chips should not be used in determining screen size, but rather the peak load which the screen is expected to handle. The importance of the correct feed arrangement including feed distribution across the full width of the screen is pointed out. 2 figures. E.S.

STEENBERG, BÖRJE. Principles of screening system design; studies in screening theory 1. Svensk Papperstidn. 56, no. 20: 771-8 (Oct. 31, 1953); World's Paper Trade Rev. 140, Technical Convention no.: 10, 12, 17-18, 20, 22 (November, 1953). [In English; first reference with German and Swedish summaries]

The first of a series on studies in screening, the article is concerned with any separation unit and not with individual screen design. The treatment is fundamental and the approach somewhat statistical. Consideration is given to single-stage screening, coupling of stages both similar and dissimilar, coupling of refiners and screening stages, and system balancing. 8 diagrams. D.H.

MANILA HEMP

NEWMAN, SANFORD B., HAMMOND, HARRY K., III, and RIDDELL, HELEN F. Becker value of manila rope by photoelectric reflectometry. J. Research Natl. Bur. Standards 51, no. 3: 141-3 (September, 1953).

Becker value, or reflectance under specified conditions, has been used for more than 20 years as an index of fiber quality in the purchase of manila cordage, because opinion in the industry holds that serviceability is related to color, the dark grades of fiber being less serviceable than the lighter. The accepted method for determining Becker value requires a visual reflectometer. Previous attempts to use photoelectric reflectometers were unsuccessful because the instruments lacked sensitivity, attributable in part to the low

transmittance of the chosen filter combination. Properly selected filters used with a sensitive reflectometer permit photoelectric determinations to be made with greater speed and precision than visual determinations. The results obtained photoelectrically agree well with the averages of visual determinations. 5 diagrams and 7 references. E.S.

MATERIALS HANDLING

WOOD, G. H. H. The essential principles of materials handling. Brit. Printer 66, no. 393: 28-31 (November-December, 1953).

Materials handling and storage are viewed as necessities which add no value to a product, but increase costs; therefore any reduction in handling or saving in storage adds to the existing profit margin or enables the price to the customer to be reduced. Responsibilities of the person in charge of materials handling and final principles concerned with the choice of the right equipment are outlined. 8 figures dealing with paper-handling equipment. R.A.S.

METERS AND RECORDERS

MURPHY, E. A. Speed measurement. Southern Pulp Paper Mfr. 16, no. 11: 42, 44, 46, 48 (November, 1953).

The advantages of the electrical tachometer for the measurement of speeds in the paper industry are discussed. Types of tachometer generators described are the separately-excited and the permanent-magnet types; the tachometer may be used with a wide variety of indicating and recording instruments and multiple-instrument operation is possible. Direct, gear, flat-belt, V-belt, spring-belt, chain, and flexible-shaft connected methods of driving the generator and their advantages and limitations are reviewed. 5 figures. R.A.S.

MILL MANAGEMENT

ELLIOTT, NORMAN J. Executive perspective. Boxboard Containers 71, no. 731: 20-1 (November, 1953).

The author outlines a formula for success in attaining and maintaining executive perspective, and gives directions to the executive to enable him to develop a sound policy, make intelligent situation appraisals, delegate responsibilities, and find the plan and purpose to developing organization. 2 tables. R.A.S.

GREENEWALT, CRAWFORD H. What makes a good executive? Paper Ind. 35, no. 8: 884-5 (November, 1953).

The attributes of leadership, judgment, and vision are considered important in the selection of individuals for business executives, but rated secondary to the ability to reconcile, co-ordinate, compromise, and appraise the various viewpoints and talents in a business. Since adequate monetary compensation is viewed as absent, prestige of the executive career, whose achievements are most frequently unheralded, should be raised as the only remaining incentive for attracting young men into the business field. R.A.S.

RETTALIATA, JOHN T. Management "tools"; essential qualities —rules of conduct. Pulp & Paper 27, no. 10: 36-7 (September, 1953).

Personal attributes and rules of conduct are presented in a checklist for self evaluation and improvement as objectives in achieving the knowledge and skills necessary in the role of management. R.A.S.

TUREK, ROBERT J. Bulletin board techniques; how Northern Paper Mills uses this communication. Pulp & Paper 27, no. 12: 73-4 (November, 1953).

Classified ads, personal sketches, cartoons, clippings, sports news, notices, birthday and illness lists, and special information and contests decorate the bulletin boards of the Northern Paper Mills, Green Bay, Wis. and serve to develop better employee relations. 1 illustration. R.A.S.

MOLDED PULP ARTICLES

PARSONS, W. E. Molded pulp products. Paper Trade J. 137, no. 20: 175-80 (Nov. 13, 1953).

The molded-pulp branch of the paper industry is described under the headings: types and characteristics of pulp used, water- and greaseproofing, other ingredients (e.g., mold preventatives), testing processes, manufacturing specifications, stock preparation equipment, molding machines, drying methods, afterpressing equipment, and stacking and handling. This is one in a series of industrial lectures on paper and paperboard converting presented at Western Michigan College. 1 flowsheet and 5 illustrations. R.A.S.

WEISS, A. C., and WILLIAMS, J. C. The why and how of slurry preforming. Modern Plastics 31, no. 3: 99-101 (November, 1953); *cf.* B.I.P.C. 23: 647.

A brief reference is made to the new "Aqua-glas" preform method of reinforced plastics, a wet-processing technique similar to that used in pulp molding. Varying ratios of cellulose fiber to glass rovings were examined, and the best results were obtained with a ratio of 20% cellulose to 80% chopped glass rovings. Aqua-glas preforms composed of only 10% chopped glass rovings to 90% cellulose fibers produce moldings with engineering properties much higher than can be obtained with all-cellulose fiber moldings. Speed, greater strength, and economy are claimed for the new method. 1 table and 9 illustrations. E.S.

MOLECULAR WEIGHT

CONRAD, CARL M. Molecular weight uniformity of cellulose and cellulose derivatives; recent development in measurement. Ind. Eng. Chem. 45, no. 11: 2511-17 (November, 1953).

This is a review of the continuous development in methods for measuring molecular-weight uniformity. Fractionation methods continue to hold the center of the stage. Recent studies have shown the superiority of precipitation fractionation over solution techniques and have emphasized the importance of proper choice of solvent and precipitant. The relative width of the sedimentation diagram and its change with change of distance from the center of rotation are used as a measure of polydispersity, which must be adjusted to zero concentration. New methods include electron microscopy, chromatographic adsorption, turbidity, streaming birefringence, coacervation fractionation, resinographic replica, and dielectric dispersion. Recent methods are concerned with quick approximations for securing the distribution curve, application of automatic or semiautomatic devices for tracing the curve, and improved mathematical techniques for expressing results. 8 tables and 68 references. E.S.

IMMERGUT, E. H., and EIRICH, F. R. Intrinsic viscosities and molecular weights of cellulose and cellulose derivatives. Ind. Eng. Chem. 45, no. 11: 2500-11 (November, 1953).

The determination of molecular weights from viscosity data by means of calibration suffers from differences in molecular weight averages and distribution, and from variations of molecular structure which express themselves in the $[\eta]$-M relationship. For accurate work calibration and unknown samples ought to have the same $\overline{M}_w/\overline{M}_n$ ratio. The theoretical interpretation of viscosity data depends on the applicability of the models of molecular shape and rigidity, the state in solution, concentration effects, and the influence of the rate of shear. Progress has been made recently in all these analyses, notably by Debye, Flory, Kirkwood, Kuhn, Peterlin, and Simha. Although questions regarding stiffness and extension of the cellulose molecules and their derivatives have been brought nearer a solution, they are still not decisively answered. Experimentally, there are new data concerning the variation of the exponent in the Mark-Houwink relation with molecular weight and solvent. Staudinger's equation is not a limiting law but fits intermediate cases. There is further evidence of a shear dependence of the intrinsic viscosity at high rates of shear or high molecular weights. 8 tables, 9 figures, and 72 references. E.S.

IMMERGUT, E. H., RÅNBY, B. G., and MARK, H. F. Recent work on molecular weight of cellulose. Ind. Eng. Chem. 45, no. 11: 2483-90 (November, 1953).

Osmotic molecular weights and intrinsic viscosity of cellulose nitrates and cellulose nitrate fractions in several solvents have been systematically studied. By combination of these results with data on the intrinsic viscosity of the primary celluloses in cupriethylenediamine, a relation is given which permits calculation of the D.P. of cellulose from intrinsic viscosity in cupriethylenediamine. Direct pressure measurements of solutions of cellulose in cupriethylenediamine were attempted, using polyvinylbutyral and sintered polytrifluorochloroethylene membranes. The shear dependence of the intrinsic viscosity of cellulose nitrates in acetone was studied and the results are presented and discussed. 5 tables, 13 figures, and 18 references. E.S.

MITCHELL, R. L. Precipitation fractionation of cellulose nitrate. Ind. Eng. Chem. 45, no. 11: 2526-31 (November, 1953).

With the objective of selecting a method for the determination of molecular-weight distribution of cellulose, which could be adopted as an ACS standard, 17 laboratories have applied their preferred fractionation procedures to six standard celluloses, which were made available through the chairman of Subcommittee 21, Committee on Standards and Methods of Testing, Division of Cellulose Chemistry, American Chemical Society, set up to study the problem. The committee reports a majority preference for precipitation fractionation of the cellulose nitrate derivative, prepared with minimum degradation. A tentative standard method has been established as one specific fractionation method, limited in scope but giving useful and reproducible data. Three operations are involved: (1) conversion of the cellulose to cellulose nitrate, (2) separation into several fractions through stepwise precipitation from solution by addition of a nonsolvent, and (3) measurement of the weight and viscosity of each recovered fraction and calculation of its average chain length. 6 tables, 5 diagrams, and 27 references. E.S.

MUELLER, WM. A., and ROGERS, L. N. Summative cupriethylenediamine fractionation of cellulose. Ind. Eng. Chem. 45, no. 11: 2522-6 (November, 1953).

Cellulose fibers can be fractionated conveniently through selective extraction with dilute solutions of cupriethylenediamine. A summative method is described in which the sample size or the concentration of the cupriethylene-

diamine can act as a parameter of variation; advantages and disadvantages of the procedure are discussed. Only data on concentrations of cellulose and the viscosities of the extracts are required to yield a summative distribution curve which, following the theory of Coppick and co-workers (*cf.* B.I.P.C. 21: 312-13), can be expanded to the usual integral and differential distribution curves. Results compare favorably with the average of distribution curves for selected standard samples examined by several different methods in cooperating laboratories. 3 tables, 6 diagrams, and 8 references. E.S.

ROSEVEARE, W. E., and POORE, LOUISE. Nitration and fractionation of rayons. Ind. Eng. Chem. 45, no. 11: 2518-21 (November, 1953).

Difficulties not anticipated from the literature were encountered in the fractionation of nitrated rayons. The results of this work show the effects of the nitrating procedure on the quality of the nitrocellulose. To obtain stable nitrocellulose with high nitrogen content and without degradation during preparation, great care has to be taken in the preparation of the sample, in control of nitration conditions, in removal of nitration mixture, and in final purification. Indications of stability and absence of degradation on nitration should be obtained before fractionation. A two-step fractionation has little advantage over a one-step, except in separating more material of very low and more of very high D.P. by refractionation of the highest and lowest one-step fractions. Sharp peaks in the D.P. distribution obtained by a two-step fractionation may appear because of accidental piling up of nonhomogeneous fractions at the same D.P. Viscosities should be measured at low concentrations if the intrinsic viscosities are to be calculated from data at one concentration, in order to avoid error caused by uncertainty in k'. 5 tables, 1 diagram, and 18 references. E.S.

SCOTT, ROBERT L. Fractional separation of cellulose; theoretical considerations. Ind. Eng. Chem. 45, no. 11: 2532-7 (November, 1953).

In both solution and precipitation fractionation of cellulose, there is thermodynamic equilibrium between a solution phase and a swollen polymer phase (the precipitate), which can be described in terms of a general theory of high polymer solutions. In precipitation, the swelling of the precipitate may be enormous, and sizeable quantities of very low molecular-weight material may be found in the first (high average D.P.) fractions. Several procedures minimize this tail effect; one of the best is extraction (washing) of the precipitate. Several general conclusions can be drawn: It is futile to subdivide into more than a few fractions per stage. Fractionation is sharper from more dilute solutions, but careful refractionation is more satisfactory than working at dilutions much lower than 1 gram/liter. A combination precipitation and extraction method is superior to either alone. Unless reasonably sharp fractions are obtained, serious errors in molecular-weight distributions and viscosity-molecular weight relations may arise. Fractionation methods depending upon solution thermodynamics cannot be expected to yield sharp cleanly defined fractions. Other methods, such as chromatography, have greater flexibility in adjusting experimental factors and may show greater selectivity; if satisfactorily perfected, they may largely displace current methods. 2 tables, 7 diagrams, and 18 references. E.S.

NOMOGRAPHIC CHARTS

C. B. The rapid determination of container sizes. Allgem. Papier-Rundschau no. 13: 558 (July 4, 1953). [In German]

A nomographic chart is presented for the rapid and simple determination of the dimensions of a container with the smallest surface for a given content. The use of the chart is outlined. 1 figure. E.S.

SCHAPHORST, W. F. The efficiency of a cooler. Pulp Paper Mag. Can. 54, no. 11: 150-1 (October, 1953).

A nomographic chart for determining the efficiency of a cooling tower is presented, and its use is explained. 1 chart. E.S.

PACKAGING

BERNOT, ANDRÉ. Reflections on the packaging mission to the United States. Rev. papiers et cartons 16, no. 18: 4-6, 8-9 (Sept. 15, 1953). [In French]

As a member of the French packaging team, the author reviews briefly the hygienic, geographic, historic, scientific, commercial, and co-operative background of packaging in the United States, as well as reasons of publicity; the different raw materials used for this purpose are listed. Measures to be taken in France for promoting and developing packaging trends are discussed, including the use of the hygienic angle, better transportation, scientific research and co-operation, and consumer education. E.S.

COUGHLIN, E. T. A. Paper and paperboard products for military use. Paper Trade J. 137, no. 20: 267-72 (Nov. 13, 1953).

The development work carried on by task groups in an effort to improve various grades of paper and paperboard items for military use is covered briefly; the requirements of military packaging and storage are described. This is one in a series of industrial lectures on paper and paperboard converting presented at Western Michigan College. R.A.S.

GARY, HOWARD C. Put it in a box, tie it with a ribbon. Chem. Eng. 60, no. 11: 322, 324-6 (November, 1953).

The chemical process industries spent over $1.5 billion on packaging during 1952. Statistical data are presented in tabular form which break down the amounts spent by different branches of the industry (pulp, paper, and board are listed with $63.8 million) and the different packaging materials used. Paperboard boxes and cartons lead with $417.4 million. 1 table. E.S.

GREAT BRITAIN. *Ministry of Supply.* Packaging for Britain's defence programme. J. Inst. Packaging 2, no. 19: 247-59, 261-8, 270, 272, 274, 276-8, 280-1, 284 (Annual no., 1953).

A series of papers read at the Exhibition Convention sponsored by the Ministry are presented under the following authors and titles: Cowlin, F. E. Packaging as a phase in supply, p. 247; Berry, E. R. The administration of packaging in the R.A.F., p. 248-50; Moore, J. A. Preservation for long term storage, p. 250-2; Gibb, R. P. Packaging against climatic deterioration, p. 252-3; Evans, D. J. Development problems in service packaging materials, p. 254-5; Schuler, S. C. Packaging of airborne electronic equipment—6 figures, p. 255-9; Lewis, Boyd R. Packaging standards for N.A.T.O. defence, p. 261-2; Hoblyn, E. H. T. The mechanization of packaging, p. 263-7; Pett, Geoffrey. Packaging and air freight, p. 267-8, 270, 284; Mott, H. P. Unitisation and its effect on packaging, p. 272, 274, 276; Geffen, Dennis H. Packaging in relation to clean food and hygiene, p. 277-8; and Parry, Morley. Public health aspects of packaging, p. 278, 280-1. R.A.S.

HARDENBURG, ROBERT E. Ventilation requirements of film-packaged produce. Paper, Film and Foil Converter 27, no. 11: 19-21, 32 (November, 1953).

The ventilation of prepackaged produce which is necessary as an entrance for oxygen and an exit for carbon dioxide and other possible volatiles and for the maintenance of the correct R.H. is discussed. Results of experiments conducted give data which point out variations caused by rate of respiration of the fruit or vegetable, temperature at which packages will be held, type of packaging (polyethylene 150 and cellophane 450 LSAT), and size and number of perforations. 6 tables and 3 references. R.A.S.

HOLMES, BURNHAM B. Selecting shipping containers for tomorrow's products. Fibre Containers 38, no. 10: 62, 64, 66, 68 (October, 1953).

The author outlines an 11-step program for developing packaging specifications for the individual packages and shipping containers for modernizing and improving a company's existing packages. E.S.

LOWEY, R. E. Packaging frozen foods. Activities Rept. Research and Develop. Associates, Food and Container Inst. 5, no. 3: 211-20 (October, 1953).

Packaging developments in the new and rapidly growing field of frozen foods are summarized. A brief history of methods of preservation of food is followed by a short summary about the history of the sharp- and quick-freezing processes and the individuals responsible for them. Types of packages suitable for frozen foods described are the Peters' style carton, the one-piece telescoping Fold-O-Matic style, the Sealrite spiral-wound paper can lined with cellophane, the Ne-style Mono-Clean cup, and the convolute-wound can in the carton field; in the field of films, the efficiencies of aluminum foil, Pliofilm, cellophane, Cryovac, and polyethylene are discussed. In conclusion, the correct evaluation of the package, possible losses, and plant and field checks are considered. 1 table. R.A.S.

OSWIN, C. R. Protective wrappings (Section III). A choice of wrappings (Parts 1-5). Brit. Packer 15, no. 5:339-41; no. 6: 405-9, 435; no. 7: 477-80, 505; no. 8: 544-7, 569; no. 9: 615-19 (May-September, 1953); *cf.* B.I.P.C. 23: 910.

The author analyzes the packaging requirements of different classes of products and suggests wrappings which appear most suitable in each case. The first part lists wrappings for bakery products, selected primarily for their grease resistance, and varying for each different type of goods such as biscuits, bread, cakes, rusks, sandwiches, and puddings. The second section gives selections for meats (fresh cuts, cooked, and cured), confectionery, cosmetics, dairy products, and drapery goods. Packaging needs of the dry-salter, florist and nurseryman, grocer (fresh fruits and vegetables, and other commodities) are considered in the third part. Outlined in the fourth section are wrappings for hairdressing, hardware, pharmaceuticals, leather work, sports goods, stationery, and tobacco. The final part summarizes packaging needs of the various freezing processes and the uses of wrappings in medicine, molding, the theater, metallizing, oil-well drilling, and by the military forces. 1 table, 17 illustrations, and 78 references. R.A.S.

RIEUF, HENRI. The interprofessional packaging mission to the

United States. Rev. papiers et cartons 16, no. 17: 11, 13, 15-17 (Sept. 1, 1953). [In French]

The author discusses the geographic, historic, economic, psychologic, hygienic, and commercial reasons for the enormous development of packaging in the United States. Scientific research and the spirit of productivity are considered essential for raising the packaging standard in France. E.S.

TURNER, C. H. Package engineering at the Chrysler Corp. Tappi 36, no. 11: 143-5A; discussion: 145-6A (November, 1953).

The author describes in a general way the automotive-parts packaging program of the Chrysler Corp. E.S.

YOWELL, L. Q. Produce prepackaging: an expanding market for the paper wholesaler. Am. Paper Merchant 50, no. 11: 20-1, 63 (November, 1953).

Paper wholesalers are urged to consider the sales market possibilities of the prepackaging of produce; however, full potential in this growing market cannot be realized without gaining some technical knowledge of the field. R.A.S.

PACKAGING—SANITATION

REED, ERNEST. Some tangential considerations in the production of liquid-tight containers. Paper Trade J. 137, no. 20: 204-7 (Nov. 13, 1953).

The problem of keeping containers free from bacteria, toxic substances, and odors is analyzed from the standpoint of public health standards for good sanitary control. This is one in a series of industrial lectures on paper and paperboard converting presented at Western Michigan College. 1 plant inspection report form. R.A.S.

PACKAGING—STERILIZATION

KEMPE, L. L., GRAIKOSKI, J. T., and BROWNELL, L. E. Ray-sterilizing food wrappers. Food Eng. 25, no. 11: 55-6, 174 (November, 1953).

Heat- and moisture-sensitive papers and films can be sterilized without any significant damage to the material by means of gamma-ray equipment. Gamma radiation instantaneously penetrates considerable depths of material and kills micro-organisms throughout the mass. Experiments were conducted using *E. coli* and *B. stearothermophilus NCA 1518;* these were placed inside individual sterile envelopes made from filter paper and placed near the center of a corrugated-paper box tightly packed with paper. The cobalt-60 gamma-ray cage was placed one inch from the carton; tables give detailed results of the experiments. 4 tables, 1 illustration, and 9 references. R.A.S.

PAPER—COATED

PAYNE, JOHN D. Coated papers and the lithographic process. Tappi 36, no. 11: 150-2A (November, 1953).

The peculiarities of the lithographic process impose special requirements on the printing paper, litho coated in particular; papers well suited for letterpress or gravure may not be suitable for lithographic printing. Strength, waterproofness, and freedom from chemical reaction are the foremost requirements of a good litho-coated paper; in addition, it must lie perfectly flat,

and be accurately trimmed with square edges and free from loose dirt or any other foreign matter. The author discusses typical problems in lithographing coated paper and some of the solutions under the headings: pickouts, cutter dust and loose dirt, blistering, coating pick, blanket pick, tail pick, dusting, ink offsetting, ink-drying troubles, misregister, embossing and hooking, curl, mealy prints, improperly used antioffset spray, and scumming. E.S.

PAPER—CONVERSION

GALBRAITH, MARTIN J. Rudiments of converting. Paper Trade J. 137, no. 20: 106-15 (Nov. 13, 1953).

Fundamental paper converting operations which form the basis of the converting industry are discussed briefly, including printing; cutting, scoring, and stripping; gluing and fastening; lamination; paper coating; and paper forming and drawing. This is one in a series of industrial lectures on paper and paperboard converting presented at Western Michigan College. 10 figures. R.A.S.

NITZ, H. Paper grain and pasting techniques. Allgem. Papier-Rundschau no. 19: 826-8 (Oct. 5, 1953). [In German]

In all conversion processes involving the use of adhesives, strict attention must be paid to the grain of paper and board; in each case, there is a correct application of the machine direction of the fibrous material which, if disregarded, will produce unsatisfactory results. Examples from bookbinding and other conversion processes are given. 5 figures. E.S.

PAPER—DEFECTS

S. L. Hidden defects in paper. Allgem. Papier-Rundschau no. 17: 728-9 (Sept. 3, 1953). [In German]

Practical examples of hidden defects in paper are described, which were not noticeable on delivery and became evident only during or after conversion. In some cases the paper was to blame; in others, incorrect treatment after delivery was responsible. E.S.

PAPER—PACKING

ANON. Carton packaging of printing papers. Graphic Arts Monthly 25, no. 11: 194, 196, 198 (November, 1953); *cf.* B.I.P.C. 23: 564.

A description of the corrugated box developed by Kimberly-Clark Corp. for the packaging of coated calendered printing paper, similar to that in the previous reference, is presented. 3 illustrations. R.A.S.

V. N. How should paper and board be packed? Allgem. Papier-Rundschau no. 17: 722-3 (Sept. 3, 1953). [In German]

Directions for the correct wrapping and packing of paper in reams and rolls for the domestic (German) and overseas market are given. Highly sensitive matrix board for stereotyping mats shipped to India and South America was packed in wooden boxes lined with zinc plate and then soldered, as specified by the buyer. E.S.

PAPER—PERMANENCE

ANON. Vinyl spray. Modern Plastics 31, no. 3: 182 (November, 1953).

Reference is made to applications of vinyl latex spray (Geon) for the restoration and preservation of old paintings and documents to protect them from dirt, insects, gases, bacteria, oxidation, and atmospheric conditions. 1 illustration. E.S.

PAPER AND PULP INDUSTRY

AMERICAN PAPER AND PULP ASSOCIATION. Survey of industry capacity—1952; proposed additions 1953-1954. Paper Mill News 76, no. 46: 103, 106 (Nov. 14, 1953); *cf.* B.I.P.C. 22: 678.

The future capacity for the total paper and board production is estimated as follows: 1952—26,901,000 tons; 1953—28,548,000 tons; and 1954—29,308,000 tons. If present plans of pulp producers are carried out, the industry capacity to produce wood pulp will increase by 2.5 million tons (12.9%) to about 21.5 million tons from the end of 1952 to the end of 1954. The capacity to produce sulfate pulp will undergo the greatest expansion, amounting to 1.4 million tons. Semichemical and groundwood pulps will increase by 332,000 and 273,000 tons, respectively, whereas the capacity to produce sulfite and soda pulps will remain practically unchanged during this period. Expected capacity increases from 1951 to 1954 by principal grades of paper and board are also listed. 5 tables. E.S.

ANON. Converted paper and board. Finnish Paper and Timber 4, no. 4: 53-4; no. 6: 74-5 (June, September, 1953). [In French and English]

Converted paper products exported from Finland are listed and discussed briefly under: packages and packaging materials, household papers, stationery, and other products. 4 illustrations. E.S.

ANON. The French paper, cardboard and wood pulp industries. Indian Pulp and Paper 8, no. 3: 179-80 (September, 1953).

Following a brief reference to the historical significance of papermaking in France, types of papers manufactured at the present time are summarized, including kraft, other wrapping papers, printing and writing papers (especially esparto), cardboard, and thin and special papers (cigarette paper, carbon backing, and Bible, high-grade tissue, "pelure" air mail, and photographic papers). R.A.S.

ANON. Italy—forest resources and forest industry. Norsk Skogind. 7, no. 10: 314-19 (October, 1953). [In Norwegian]

Statistical data on the Italian pulp and paper industry are presented. 10 tables. E.S.

KOTTE, HANS. Another trip to Sweden. Allgem. Papier-Rundschau no. 18: 780-3; no. 19: 814-15; no. 21: 893-5 (Sept. 19, Oct. 5, Nov. 5, 1953). [In German] *cf.* B.I.P.C. 20: 800-1.

The principal purpose of the present trip was the study of Swedish economical and sales-promoting packaging methods. In addition to a visit to Åkerlund och Rausing and affiliated Tetrapak AB in Lund and Esselte in Norrköping and Stockholm, the author studied new instruments at the Forest Products Laboratory in Stockholm and new installations in the mills at Skoghall, Jönköping, and Lilla Edet. Reference is made to the increasing number of self-service stores in Sweden. 16 illustrations and 7 footnotes. E.S.

PACKARD, ROLAND A. Mutual Security Program; a report on its recent activities in foreign lands. Pulp & Paper 27, no. 9: 74, 76 (Aug. 10, 1953).

The author reports on the progress in increased pulp and paper production in Western Europe and the Far East brought about by the Mutual Security Program, which in January, 1951 succeeded the Marshall Plan. Financing was provided for Austria, Italy, and Portugal; a program of help and rehabilitation is underway in Formosa; and plans are being made for expanding production in the Philippines. 6 figures. R.A.S.

PAPER MILL NEWS. $500,000,000 for new mills, new machines, modernization. Paper Mill News 76, no. 46: 48, 50, 52 (Nov. 14, 1953); *cf.* B.I.P.C. 23: 269.

The expansion and modernization programs of different U. S. and Canadian mills are listed in alphabetical order by the name of the companies; included are the new mills or new machines which have started operation in 1953 or are under construction or projected for 1954 and 1955. E.S.

PERRY, HENRY J. Some economic aspects of paper and paper board converting industry. Paper Trade J. 137, no. 20: 101-5 (Nov. 13, 1953).

The general economic position of the pulp and paper industry is discussed; aspects considered are competition, sales appeal, retail distribution, quality, and pricing. This is one in a series of industrial lectures on paper and paperboard converting presented at Western Michigan College. 9 diagrams. R.A.S.

TURNER, JOHN S. Milestones 1943-1952. Pulp Paper Mag. Can. 54, no. 11: 121-6 (October, 1953); *cf.* B.I.P.C. 24: 213.

The final article in the author's series on the history of the pulp and paper industry in Canada summarizes the voluminous production after the end of World War II, the fast conversion to peacetime needs, and new heights in paper production and technological developments. The analysis of the final decade is followed by an annual review of 1952, including mill and personnel changes and necrology. 5 illustrations. R.A.S.

PAPER AND PULP INDUSTRY—PUBLIC RELATIONS

BENDETSEN, KARL R. What is public relations? Paper Mill News 76, no. 48: 19 (Nov. 28, 1953).

Public relations is defined as a philosophy of management, a fundamental attitude of mind, whose policies should be based on enlightened self-interest and purpose to act in the interest of the public. R.A.S.

PAPER AND PULP MILLS

ANON. Chesapeake of Virginia's new maintenance building; model mill machine shop. Pulp & Paper 27, no. 12: 60, 63 (November, 1953).

The construction of the machine shop and maintenance building of The Chesapeake Corp. of Virginia at West Point is described; location of the various departments with emphasis on ease of handling and efficiency of maintenance and machine work is discussed. 7 illustrations and 2 floor plans. R.A.S.

ANON. La Société Nouvelle de Papeterie at Grand-Couronne. Papier, carton et cellulose 2, no. 4: 54-7 (September-October, 1953). [In French]

The installations of the French newsprint mill at Grand-Couronne in the vicinity of Rouen are described. Founded in 1927, the mill is situated near the mouth of the river Seine and receives its domestic pulpwood supply by rail and imported pulpwood from Canada and the Scandinavian countries by sea transport. The three high-speed paper machines (two constructed by Voith and one by Walmsleys) have an annual production of 95,000 metric tons, which amounts to approximately 28% of the French newsprint output. 8 illustrations. E.S.

PULP & PAPER. Complete report on newest complete mill in South; St. Regis "Jax" mill. Pulp & Paper 27, no. 10: 54-6, 59, 62-3, 66, 68 (September, 1953); *cf.* B.I.P.C. 23: 427.

A detailed description of the kraft pulp, paper, and board mill of St. Regis Paper Co. at Jacksonville, Fla. similar to that in the previous reference is given. 25 figures and 2 maps. R.A.S.

PULP & PAPER. Evadale equipment; East Texas directors in Vancouver, B.C. Pulp & Paper 27, no. 10: 49-50 (September, 1953); *cf.* B.I.P.C. 23: 497.

Details of the design and equipment for the Evadale mill of the East Texas Pulp & Paper Co. are described. The mill will produce chlorine dioxide bleached kraft market pulp using the Solvay process; equipment includes a Beloit 216-inch Fourdrinier machine (designed for pulp and foodboards), a 210-inch Lamb-Grays Harbor cutter and layboy, and a Washington Iron Works 800-ton hydraulic press. 1 figure. R.A.S.

PULP & PAPER. Japan's Alaska plan; Alaska Pulp Development Co. organized. Pulp & Paper 27, no. 10: 30, 32, 88; no. 11: 54, 56; no. 12: 55 (September-November, 1953).

Plans of Japanese companies to invest in an Alaska Pulp Development Co., which would in turn invest in an American-owned, -staffed, and -directed corporation, are discussed. Views of Japanese, Alaskan, and American officials, including views on behalf of the U. S. State and Commerce Departments and the Export-Import Bank, are presented. Letters giving the views of the U. S. State Department are cited. The third article confirms the formation of Alaska Pulp Co. of Japan and discloses plans of the directors of the group to complete arrangements for financing the corporation to be known as the Sitka Lumber & Pulp Corp. 1 illustration in the first reference. R.A.S.

PULP & PAPER. New York mill of tomorrow; automatic quality control features. Pulp & Paper 27, no. 11: 64-6, 68, 70 (October, 1953); *cf.* B.I.P.C. 18: 607; 24: 195.

Designated as recent outstanding features of the Newton Falls Paper Mill, Inc., Newton Falls, N.Y. are those which involve automatic quality control. They include a jordan control system, and defoamer, basis weight, moisture, and brightness controls. Reference is also made to the modernization of housing in the town itself. 1 map and 15 illustrations. R.A.S.

PAPER AND PULP MILLS—WATER SUPPLY

CROSS, H. M. Water conservation at Dalhousie. Pulp Paper Mag. Can. 54, no. 11: 134-5 (October, 1953).

When the daily production of the Dalhousie newsprint mill of the New Brunswick International Paper Co. was increased from 400 to 800 tons (without the installation of additional paper machines), a careful study had to be made of water-conservation procedures to make the most effective use of the available fresh-water supply which could not be increased. The author describes the action taken along the lines of water conservation under the headings: process changes, reclamation, fresh-water substitutes (the use of salt water for fire protection, furnace-ash sluicing, barking drum showers, etc.), and reduction of waste. E.S.

PAPER AS A TEXTILE MATERIAL

SELLERS, T. M. Twisted paper products. Paper Trade J. 137, no. 20: 190-2, 195-6 (Nov. 13, 1953).

The history, raw materials, methods of manufacture, moisture control, present uses, and future of twisted paper products are described. This is one in a series of industrial lectures on paper and paperboard converting presented at Western Michigan College. 5 illustrations and 6 references. R.A.S.

PAPER CONDITIONING

ZUCKERMAN, ROBERT. Exhausted profits. Paper, Film and Foil Converter 27, no. 11: 28, 30, 32 (November, 1953).

The results of a study for collecting the available information on retention and restoration of moisture in flexible wrapping materials are presented. The general problem was broken down into the following categories: handling and storage by the consumer and converter; converting of unprinted materials into sheets, bags, and reprocessed rolls; and converting of printed materials. Replies to a questionnaire on the steps which have been or could be taken to minimize or eliminate width and length shrinkage and weight loss from the wrapping material (cellophane, glassine, etc.) and to retain or restore the original properties of the material are discussed. R.A.S.

PAPER FINISH

BRAUNS, O., and PETERSON, V. The finish (gloss) of machine-glazed paper. I. Machinery variables. Svensk Papperstidn. 56, no. 19: 727-33 (Oct. 15, 1953). [In Swedish; English and German summaries]

A study was made on the Swedish experimental paper machine of some of the factors which influence the finish (I) of an M.G. paper, including the moisture content of the web before the Yankee cylinder, the roll pressure against the cylinder, the use of one or two press rolls, the cylinder temperature, and the beating degree of the paper stock. To insure a uniform surface, thin sheets of steel were inserted between the paper and the cylinder face in the nip of the first press. Analysis of variance applied to the results shows an influence of the above-mentioned factors, with the exception of the cylinder temperature. With increasing moisture content of the web, the gloss of both sulfate and sulfite pulps increases in a straight-line ratio. At higher roll pressures, (I) increases throughout the investigated range for sulfate pulps, but reaches a maximum for sulfite pulps. When the beating degree is raised from 15 to 20° S.-R., (I) increases for both pulps; on further beating

a rapid decrease takes place, which is particularly noticeable in the case of sulfite pulps. The best (1) was obtained for the highest moisture content of the sheet and the highest roll pressure in combination with the use of a stock beaten to about 20°. The studies are being continued. 9 tables, 8 figures, and 4 references. E.S.

PAPER MANUFACTURE

ARNOLD, K. A. European paper developments. Tappi 36, no. 11: 136-8A (November, 1953).

Developments in pulp- and papermaking machinery and methods observed by the author during a recent European trip are reviewed briefly. E.S.

HOLZER, WALTER F. What is new in Europe; a 1953 report on technical progress. Pulp & Paper 27, no. 11: 96, 98 (October, 1953).

The author reports on the technical progress which he observed on a recent European tour, notably in Sweden. Descriptions are given of a continuous kraft digester, several new slot-type screens with vibrating plates, spray-type furnaces and recovery boilers, use of chlorine dioxide, heat exchangers, vacuum-pump turbines, utilization of wastes, and expansion of research resources. R.A.S.

PAPER SPECIALTIES

ANON. Abrasive papers. Papier, carton et cellulose 2, no. 4: 58 (September-October, 1953). [In French]

The requirements for suitable base papers for the abrasive industry are discussed. Kraft or rope stocks are employed on either Fourdrinier (for rolls or endless webs) or cylinder machines (for disks). High tensile, tear, and bursting strengths are of prime importance. 1 illustration. E.S.

ANON. A booming American industry. Rev. papiers et cartons 16, no. 15-16: 10-11 (Aug. 1 and 15, 1953). [In French]

The development of the paper milk bottle in the United States is recorded. 1 table and 2 illustrations. E.S.

ANON. Box trays for take-out lunches and dinners. Paper Sales 13, no. 11: 18 (November, 1953).

Paper merchants are advised to investigate the field of take-out meals with the various paper products required, including box trays, paper cups and containers, liquid-tight lids, paper pie plates, plastic or wood spoons and forks, paper napkins, waxed paper, salt packets, and food trays. 1 illustration. R.A.S.

ANON. Here's something new for bakeries. Paper Sales 13, no. 11: 15, 46 (November, 1953).

The use of pan liners (made from silicone-treated vegetable parchment or a bleached greaseproof sheet) for pastries enables the pastry to be lifted out of the pans and placed directly into consumer cartons, and to be transferred to the oven for reheating by the consumer while still on the original liner. It eliminates greasing, scraping, and washing of baking pans and trays; the white liner emphasizes cleanliness. 2 illustrations. R.A.S.

ANON. Laid papers—once and today. Allgem. Papier-Rundschau no. 13: 550 (July 4, 1953). [In German]

Laid papers have a ribbed or lined appearance resulting from the laid wires in the mold or dandy roll; the chain wires are visible as light and sometimes disturbing lines. They were originally a necessary evil which could not be avoided and frequently caused troubles to the printer, particularly if the paper was not cut accurately parallel with these lines. Modern laid papers omit these disturbing cross lines (which serve no purpose, for instance, in cigarette papers) and exhibit a more quiet surface in which the ribbing is not too obvious. They can be printed without difficulty. 2 figures.
E.S.

ANON. Paper sells to motels. Paper Sales 13, no. 11: 12-14, 46 (November, 1953).

Motels are viewed as a relatively new but rapidly expanding market for paper products. Items which the motel can provide for the convenience of its guests, as well as those for the needs of the operator in maintenance and supplies for restaurants and service stations, are listed. 3 illustrations.
R.A.S.

ANON. Vapourize your rust problems. Can. Chem. Processing 37, no. 10: 78, 80 (September, 1953).

The development of volatile corrosion inhibitors by the Shell Development Co., Emeryville, Calif. involving small amounts of certain nitrites is reviewed briefly. The company markets the vapor-phase inhibitor materials under the trade names V.P.I. 260 (dicyclohexylammonium nitrite) and V.P.I. 220 (diisopropylammonium nitrite). The successful packaging of steel products in V.P.I.-coated paper is described. E.S.

BAKER, HORACE C. Crepe paper and creping machines. Paper Trade J. 137, no. 20: 238-9 (Nov. 13, 1953).

This study of crepe paper describes methods of production for five processes, i.e., dry creping, semicreping in paper machines, creping laminated papers, embossing, and special type creping. This is one in a series of industrial lectures on paper and paperboard converting presented at Western Michigan College. R.A.S.

BOYD, R. L. Manufacture of wallpaper. Paper Trade J. 137, no. 20: 240, 242-6 (Nov. 13, 1953).

The history, distribution and sales, raw materials, preparation, printing rollers, grounding, drying, printing, hardening, finishing, and raw stock are discussed in this summary of the manufacture of wallpaper. This is one in a series of industrial lectures on paper and paperboard converting presented at Western Michigan College. 1 flowsheet and 8 illustrations. R.A.S.

CAINE, ROBERT D. Waxed papers. Paper Trade J. 137, no. 20: 197-200 (Nov. 13, 1953).

Processes of making waxed papers are classified as dry waxed, wet waxed, heat-sealing wet waxed, waxed one side, and wax laminated; considerations necessary in the manufacture of each of these types are given. This is one in a series of industrial lectures on paper and paperboard converting presented at Western Michigan College. 2 figures. R.A.S.

CALVER, HOMER N. Round nesting paper drinking cups and food containers. Paper Trade J. 137, no. 20: 208-11 (Nov. 13, 1953).

The author lists types of paper cups and food containers and discusses manufacturing processes, specifications, waxing, and sanitation of these products. This is one in a series of industrial lectures on paper and paperboard converting presented at Western Michigan College. 1 illustration.
R.A.S.

CINCINNATI INDUSTRIES, INC. Product of basic research X-Crepe finds applications. Ind. Labs. 4, no. 11: 34-7 (November, 1953).

A number of applications for X-Crepe, a paper which stretches in all directions, have been developed and are described. It is now used for bias binding (edge binding in fly swatters and edge-roll covers in place of burlap in the manufacture of furniture), in the packaging field, for gluing felt riser pads in the upholstery of automobiles, for replacing cloth in the post-forming of plastic stocks, and for wrapping rolls for plastic-coated materials. 4 illustrations.
E.S.

DERLIN, WALTER. Paper products for the household, canning, and hotels and restaurants. Papetier 7, no. 10: 82-3 (October, 1953). [In French]

The author shows by different examples how the sales of household papers and similar paper products can be increased by appropriate displays of their applications. 6 illustrations.
E.S.

FOEX, LUCIEN. Paper sacks and food hygiene. Rev. papiers et cartons 16, no. 20: 5-6, 8 (Oct. 15, 1953). [In French]

The author emphasizes the hygienic aspects of single-use paper bags and sacks as compared with textile bags and quotes the opinions of various agencies in different countries.
E.S.

GARTE, HANS. Offset printing and paper. Allgem. Papier-Rundschau no. 13: 559-62; polemic: no. 19: 828-30 (July 4, Oct. 5, 1953). [In German]

Following a brief description of the principle of offset printing and the preparation of the printing plates, the required properties of suitable paper are discussed under: (1) correct furnish and sizing which will eliminate linting and dusting; (2) packaging which clearly differentiates between wire and felt side, the former with a more closed surface being preferable for multicolor illustrations, whereas surface roughness and nonuniformity do not matter; (3) high whiteness; and (4) dimensional stability. The papermaker should always be informed whether his paper will be used for printing in one or several colors, for accurate register (as in map printing) or less accurate work (posters), and at what moisture content it should be delivered to the printing plant; the last-named factor involves appropriate wrapping. A discussion by a papermaker is presented in the second part of the article in which the possible and impossible requirements of the printer and factors over which the papermaker has no control are covered. 1 diagram.
E.S.

KIRKPATRICK, WILLIAM A. Baryta coated photographic paper. Paper Trade J. 137, no. 20: 247-50, 252 (Nov. 13, 1953).

The base stock, manufacture of barium sulfate, coating formulation, coating application, drying, calendering and finishing, testing, and production are outlined as steps in the production of photographic paper. This is one

in a series of industrial lectures on paper and paperboard converting presented at Western Michigan College. 6 illustrations. R.A.S.

KOTTE [HANS] What does "free from chlorine and acids" signify in the case of paper? Allgem. Papier-Rundschau no. 14: 595 (July 20, 1953). [In German]

The requirement for freeness from chlorine and acids for metal-wrapping papers does not indicate anything if the absence of free chlorine or free acid is understood and the presence of chlorides or acid-reacting salts is not taken into account. The presence and extent of such agents must be established and other factors which may promote corrosive attack taken into consideration. An example of paraffin paper is given which was stored in a cold room. When brought into the heated shipping room and used immediately for the wrapping of steel goods, the latter were attacked by rust within a short time. When the identical paper was left in the shipping room for several days prior to use, no corrosion developed. The type of metal must also be considered; a suitable wrapper for very sensitive steel goods proved quite inadequate in the case of silver leaf. Corrosive attack caused by paper can usually be traced to chemical or electrochemical processes which take place in the paper with the formation of oxygen or sulfur compounds under the influence of air, process water, plasticizers, dyestuffs, etc. Several examples of such occurrences are given. In addition to chemical methods for the detection of corrosive ingredients (for which numerous procedures exist), practical wrapping experiments under corrosion-promoting conditions (tropical climate) are recommended. 1 reference. E.S.

LONG, BRUCE. There's new life—and profits—in locker plants. Paper Sales 13, no. 11: 16-17, 46 (November, 1953).

Business open to paper merchants in locker plants consists of products of interest to both the operator himself and the home-freezer owners to whom he retails. Paper products featured to meet these needs are polyethylene plastic bags; foil; cellophane rolls and sheets; laminated, waxed-one-side, and polyethylene locker papers; and package tape; savings and service to operators in this field are discussed. 2 illustrations. R.A.S.

MCFARLAND, F. BRUCE. Converting of carbon papers. Paper Trade J. 137, no. 20: 230-2, 234, 236-7 (Nov. 13, 1953).

Following a brief history of the manufacture of carbon paper, various grades of carbon paper (typewriter, pencil, roll pencil, hectograph, transfer posting, and one-time carbon papers, carbonized book paper, carbonized news and halftone news, typewriter ribbons, and spot carbonizing) are discussed. This is one in a series of industrial lectures on paper and paperboard converting presented at Western Michigan College. 2 diagrams. R.A.S.

MACKENZIE, R. S. Tags, labels and tickets. Paper Trade J. 137, no. 20: 226-9 (Nov. 13, 1953).

The author discusses raw materials, testing, manufacture, gumming, cutting, and sealing of marking tags, labels, and seals. This is one in a series of industrial lectures on paper and paperboard converting presented at Western Michigan College. 3 illustrations. R.A.S.

NAZZARO, RALPH T. Specialty impregnation. Paper Trade J. 137, no. 20: 273-9 (Nov. 13, 1953).

The author covers present techniques and limitations of specialty impreg-

nation, uses, and future possibilities. Thermoplastic and thermosetting resins are the two broad classes of materials used; three general methods of manufacturing treated papers are considered—beater, stock chest, or headbox addition; wet web saturation; and size tub or off-machine dry saturation. This is one in a series of industrial lectures on paper and paperboard converting presented at Western Michigan College. 10 tables, 5 diagrams, and 31 references. R.A.S.

RUTZ, MARSHALL. Converting of parchment and greaseproof papers. Paper Trade J. 137, no. 20: 201-3 (Nov. 13, 1953).

The process of parchmentizing, chemical additions and treatments, testing and printing of vegetable parchment, as well as uses and properties, are described. The manufacture of greaseproof paper is also outlined; the further conversion and testing nearly parallels that of vegetable parchment. This is one in a series of industrial lectures on paper and paperboard converting presented at Western Michigan College. R.A.S.

SCHNEBELEN, A. The manufacture of decalcomanias by the silk-screen printing process. Allgem. Papier-Rundschau no. 19: 823-4 (Oct. 5, 1953). [In German]

Methods for silk-screen printing upon simplex and duplex decalcomania paper and metal or glass for "self-adhering" transfers and the required equipment are described. E.S.

SPRING, C. P. Specialty bags. Paper Trade J. 137, no. 20: 186-9 (Nov. 13, 1953).

A description is given of specialty bags, including grocery, millinery, notion, garment, laundry, bread, family flour, sugar, coffee, potato, and duplex automatic and open-mesh woven paper bags. This is one in a series of industrial lectures on paper and paperboard converting presented at Western Michigan College. 2 illustrations. R.A.S.

STAATS, PHILIP L. Electrical papers. Paper Trade J. 137, no. 20: 280-8 (Nov. 13, 1953).

Specific requirements for paper used in electric insulation are given for coil, condenser, saturating, slot, and cable papers, pressboard, and vulcanized fibers. This is one in a series of industrial lectures on paper and paperboard converting presented at Western Michigan College. 6 tables, 14 figures, and 4 references. R.A.S.

STANESLOW, B. J. Manufacture of business forms. Paper Trade J. 137, no. 20: 212-19 (Nov. 13, 1953).

Business systems, selection of papers, permanence, color, finish, opacity, weight, thickness, filing problems, carbon manifolding, and transfer posting are considered in a discussion on the production of business forms. This is one in a series of industrial lectures on paper and paperboard converting presented at Western Michigan College. 20 figures. R.A.S.

WIGHT, ELIOT L. Highlights of the envelope industry. Paper Trade J. 137, no. 20: 220-5 (Nov. 13, 1953).

Various phases in the manufacture of envelopes are considered briefly, including merchandising, uses, raw materials, die and blade cutting, folding, and gums. Styles are pictured and size measurements given for 47 types of

envelopes. This is one in a series of industrial lectures on paper and paperboard converting presented at Western Michigan College. 58 figures. R.A.S.

PATENTS

THE INSTITUTE OF PAPER CHEMISTRY. United States patents on papermaking, second quarter, 1953. Tappi 36, no. 11: 172-80A (November, 1953); *cf.* B.I.P.C. 24: 42.

An annotated list of U. S. patents for the second quarter of 1953 is presented. E.S.

PENETRATION

DESHPANDE, P. R. Penetration of cooking liquor in relation to the anatomical structure of bamboo. Indian Pulp and Paper 8, no. 3: 167-8 (September, 1953).

The author compares the penetration of cooking liquor into hardwood, coniferous, and bamboo chips and explains the poor penetration of bamboo chips by the presence of an impenetrable epidermis and strong and rigid bundle sheaths, a smaller area of conducting channels, and the absence of ray cells. Crushing enhances the rate of penetration, because it shatters the epidermis, breaks the rigidity of the bundle sheaths, and creates cracks which form additional conducting channels. 1 table. E.S.

PHYSICAL TESTING

STEPHENSON, E. E., JR., and WILES, H. O. Testing for the paper converter. Paper Trade J. 137, no. 20: 289-96 (Nov. 13, 1953).

Following an analysis of the concept of testing and the statistical approach to testing, numerous testing procedures and equipment for physical, functional, and accelerated tests are outlined. This is one in a series of industrial lectures on paper and paperboard converting presented at Western Michigan College. 25 illustrations. R.A.S.

PHYSICAL TESTING—INK

KOTTE [HANS] Ink resistance to dry rub; the dry-rub tester of the Sutherland Paper Company, Kalamazoo, Mich. Allgem. Papier-Rundschau no. 19: 819-20 (Oct. 5, 1953). [In German] *cf.* B.I.P.C. 23: 272.

The Sutherland ink-rub tester and its mode of operation are described. 1 illustration. E.S.

PHYSICAL TESTING—PAPER—GLOSS

BATES, J. BERTRAM. Determining gloss on printed packages. Am. Boxmaker 42, no. 11: 15-16 (November, 1953); Paper, Film and Foil Converter 27, no. 12: 21-2 (December, 1953).

Results of tests made by the gloss committee of Packaging Institute, Inc. on several glossmeters (one 60° Photovolt and three 75° Photovolt instruments) to determine gloss on specimens of a good commercial grade of CIS label red stock in six gloss steps are reported. 4 tables. R.A.S.

PHYSICAL TESTING—PAPER—SIZE RESISTANCE

CHÊNE, M. The measurement of the degree of sizing of paper. Assoc. tech. ind. papetière, Bull. no. 3: 61-8 (1953). [In French]

To evaluate the reliability of the Carson size test (I), the author pre-

sents and compares the results of size tests of some 60 papers in the first part of the article. The tests included (1), the Cobb test, an electrical test similar to the Valley size test, and a writing test; porosity data are also presented. The size-test results did not agree with the writing test. The effect of temperature on the results of (1) was examined for six papers. For five of them the test values decreased and for one paper the test values increased when the temperature was changed from 15 to 20°C. (1) is not recommended. The author states that papers are penetrated slightly more rapidly by Waterman's black ink than by water; the standard AFNOR ink gave results in agreement with the Waterman ink. The writing test permits the classification of papers into three groups (well, medium, and poorly sized). In the second part the author discusses the work of wetting of a solid by a liquid and the penetration of liquid drops into paper, as well as TAPPI Standard T 458 m-48. In the case of the writing papers investigated, the TAPPI method was found to be unreliable; a well-sized paper gave a contact angle of 89°, whereas poorly sized papers exhibited angles of 90°. A period of 60 seconds was found much too short for showing any diminution in contact angle. The studies for finding a reliable sizing test are being continued. 1 table and 14 figures. G.R.S.

PHYSICAL TESTING—PAPER—WET STRENGTH

ANON. A new instrument for determining the wet bursting strength of the paper web. Allgem. Papier-Rundschau no. 13: 551-2 (July 4, 1953). [In German] *cf.* B.I.P.C. 23: 662.

A brief description of the instrument referred to by Alfthan in the previous article is given. 2 figures and 1 reference. E.S.

PHYSICAL TESTING—PULP—MOISTURE

ÅLANDER, P., and FOGELBERG, B. C. A new rapid method for the determination of the variations in dry content of pulp bales. Paper and Timber (Finland) 35, no. 10: 371-8 (October, 1953). [In English]

A rapid test method has been developed to be used in connection with official tests for the determination of variations in moisture content from one pulp bale to another. It is designed for use with the British standard wedge method of sampling. A portable fan drier has been constructed for the rapid drying of the samples, in which airdry pulp can be dried in 1.5-2 minutes at 165°C. and wet pulp in 10-15 minutes; the corresponding drying times at 140° are about 3 and 25 minutes, respectively. Possible errors are very small (some tenths of 1%) and are of no consequence. For rapid testing, 12 bales are as a rule sufficient for estimating the variation in moisture content in a shipment of pulp. In some cases it may be of advantage to test more bales. It is statistically shown how the number of bales to be sampled depends on the size of the shipment and the variability. Directions are also given for correcting the variability as obtained from the rapid tests to give a sufficiently accurate estimation of the real variability. In conclusion, the suggested procedure for rapid testing of dry pulp is outlined, showing the number of bales to be sampled for the ordinary test under different conditions by means of special sampling tables. To be also applicable to wet pulp, the method requires further development. 10 tables, 2 figures, and 8 references. E.S.

PHYSICAL TESTING—PULP—SURFACE AREA

THODE, E. F., CHASE, A. J., MAJMUDAR, S. S., and MACKINNON, D. R. Dye adsorption on wood pulp. III. Effect of pulp proc-

essing on specific adsorption. Tappi 36, no. 11: 498-504 (November, 1953); *cf.* B.I.P.C. 23: 41.

Further experiments on the adsorption of the direct dye Benzo fast scarlet 4BSA (C.I. 327) from dilute solution have been made with bleached sulfite and alkaline pulps as adsorbents. Beater tests on four pulp samples representing different wood species and different types of cooks have been compared with results of dye adsorption tests. The results demonstrate that for any given chemical pulp the various physical properties measured during a beater test vary linearly with the logarithm of specific adsorption. This appears to hold for alkaline pulps despite the fact that the isotherms characteristic of sulfite pulps are not obtained upon adsorption on alkaline pulps. It is thought that this difference in isotherm characteristics may be related to the base-exchange capacity of the alkaline pulps. It appears that specific adsorption is not a unique criterion of strength properties of pulp when comparing pulp samples of different wood species or from different cooking processes. It is concluded as a result of controlled bleaching experiments that changes in dye adsorption parallel changes in the physical properties of sulfite pulp during the normal course of bleaching. Dye adsorption experiments cannot be run on peroxide-bleached pulps by the present technique. Indications are, from preliminary observations, that changes in physical properties of pulp induced by drying are paralleled by similar changes in dye adsorption. A connection of the decrease in dye adsorption on drying with the hypothetical "irreversible cornification" phenomenon of pulp fibers is suggested. 3 tables, 10 figures, and 9 references. E.S.

PILOT PLANTS

ANON. Brown Co. pulp pilot plant at Berlin. Pulp & Paper 27, no. 12: 114 (November, 1953).

Equipment installed in the pulp pilot plant at the mill of the Brown Co., Berlin, N.H. is described, including a 500-lb. pulp-capacity digester, an Impco stainless-steel rotary vacuum filter, and various instruments and other equipment. 2 illustrations. R.A.S.

PLASTICIZERS IN PAPER

KUBAT, J. Studies on plasticizers for paper. Svensk Papperstidn. 56, no. 19: 739-44 (Oct. 15, 1953). [In Swedish; English and German summaries] *cf.* B.I.P.C. 21: 339-40.

Several alkanol and alkylamine salts, N-alkanolamides, and ammonium halides were investigated for their effectiveness as plasticizers in paper. The paper samples were impregnated with aqueous solutions of the substances under investigation and afterwards dried in the air without stress. The stiffness was measured with the Clark stiffness tester according to TAPPI Standard T 451 m-40. The N-alkanolamides and alkanolamine hydrochlorides were found to be especially efficient plasticizers. Changes in the properties of the plasticized papers (tendency for crystallizing of plasticizer in the sheet and changes in mechanical properties, moisture content, and swelling of plasticized paper) were studied. The increase in moisture content was found to be more or less insignificant with the quantities of plasticizer used. It is also shown that the stiffness is independent of the manner in which the plasticizers are applied. 3 tables, 6 diagrams, and 13 references. E.S.

PLASTICS—PAPER-BASE

ANON. Beauty bent for strength, convenience, economy. Modern Plastics 31, no. 3: 113-15 (November, 1953).

Postforming of decorative laminates is one of the most rapidly advancing fabricating techniques in the plastics industry. The postforming process consists essentially of the heating and bending of a laminated plastic sheet to some desired curvature or radius; fabric-base materials are used for most postforming work involving industrial applications, and kraft paper is used as a base for decorative postformed laminates. These cloth or paper-laminated sheets, as produced by the Formica Co., are impregnated with a Bakelite phenolic laminating varnish and cured to the "C" stage. Upon heating under controlled conditions, preferably with infrared lamps, the varnish softens and the sheet may be bent, drawn, or formed at low pressures. This operation should be performed immediately after the sheet reaches the correct temperature. Two different methods for producing finished jobs are outlined. In one, the postformed Formica is bonded to its preshaped plywood backing, whereas the other method requires that the decorative sheet be bonded to its backing before being formed. Table tops are generally made by the first procedure, whereas cove-type sink tops usually are made by the second. 7 illustrations. E.S.

ANON. Postforming progress. Bakelite Rev. 25, no. 3: 8-11 (October, 1953); *cf.* abstract above.

This article gives essentially the same information as the previous reference, although the two are not identical. 11 illustrations. E.S.

KUSSMANN, JAMES E. Paper base laminates. Paper Trade J. 137, no. 20: 254-6, 258, 260-1 (Nov. 13, 1953).

The author limits his discussion of paper-base laminates to high-pressure laminates formed by pressing sheets of paper which have been impregnated with a resin binder into a homogeneous mass. Characteristics and properties of numerous grades of laminates are given in tabular form; the data are the result of tests made in accordance with the latest A.S.T.M. test specifications. The process of laminating and physical testing of the laminates are described. This is one in a series of industrial lectures on paper and paperboard converting presented at Western Michigan College. 3 tables and 4 diagrams. R.A.S.

PRINTING AND PRINTER'S INK

ANON. Fine art for beer. Modern Packaging 27, no. 3: 100-3 (November, 1953).

The six-can carrier carton of the Goebel Brewing Co., Detroit is the first in this field to use full-color pictorial reproduction, rotogravure-process printing and a high-quality, bleached-kraft board. The carton costs no more than the conventional two-color letterpress carton previously used; the cost of the rotogravure plates was less than the estimated cost of letterpress plates for the same job. The printing and cartoning operations are outlined. 7 illustrations. R.A.S.

DICKEY, ROGER C. Printers and folding boxboard. Graphic Arts Monthly 25, no. 11: 160, 162, 188, 190 (November, 1953).

The close affinity between the printing of paperboard and that of paper is pointed out in a suggestion that printers cultivate the paperboard field. The imprinting of previously printed and fabricated folding boxes and of display cards requires no additional equipment. Problems common to printing on both mediums and the special properties of paperboard are discussed. R.A.S.

LATHAM, CHARLES W. What influences drying? Am. Printer 134, no. 11: 30-1, 50, 52, 54, 56 (November, 1953).

The author discusses the effect of paper, ink, and humidity on the drying process in printing. Paper affects drying in at least two ways: its surface absorbency or permeability determines the rate of absorption drying and its chemical properties (acidity or alkalinity) retard or accelerate drying of ink by oxidation and polymerization. This holds particularly for coated papers. In the case of uncoated papers these effects are more or less obscured by other factors. The setting time of an ink on a particular paper stock will depend on the following factors: size of capillary pores in the paper, number of pores/unit area of paper surface, particle size of the ink pigment, concentration of pigment in the ink, composition and viscosity of the ink vehicle, and thickness of the ink film. The effect of moisture on drying is the same regardless of whether the source is the paper, the atmosphere, or the press fountain. Since drying usually takes place in the delivery pile, moisture from all these sources combines to produce a more or less humid condition in the atmosphere between the sheets and in the pores of the paper, depending on the total moisture involved. It is this humidity condition that affects the drying of ink, but the extent of its effect depends upon the nature of the ink and of the paper. 2 tables and 8 figures. E.S.

PRESTON, BEN R. The role of printing plates in paper conversion. Paper Trade J. 137, no. 20: 130-2, 134-6 (Nov. 13, 1953).

Following a brief resume of the history of printing and its significance, the kind of printing plate required for each of the three major types of printing is described—gravure printing utilizing engraved-in printing plates; lithography or planographic, an image photographed on zinc or aluminum; and letterpress, photoengravings. The use of electrotypes in letterpress printing is also mentioned. This is one in a series of industrial lectures on paper and paperboard converting presented at Western Michigan College. 22 figures. R.A.S.

PRINTING AND PRINTER'S INK—ANILINE PROCESS

COOPER, NORMAN. Increasing yield of printed packaging materials through improved stability. Paper, Film and Foil Converter 27, no. 11: 24, 26 (November, 1953). [Abridgment]

Definitions are given for factors and conditions which pertain to the stability of flexographic printing—ghosting after printing, operational offset, delayed offset, blocking, and bleeding. Blocking was considered the main offender, so that the development of a test procedure is being undertaken by the Packaging Institute; in the experimental work this test will be used by nine different companies with standardized materials, inks, equipment, procedures, and pressures. R.A.S.

COZZA, JOHN. Flexographic printing—the answer to quality on a budget. Paper, Film and Foil Converter 27, no. 11: 22-4 (November, 1953). [Abridgment]

Flexographic printing from the standpoint of economy scores over other printing processes on many points. The rubber plate costs less initially, is not influenced by the intricacy of the design, has an official life up to a million impressions, is more resistant to accidental damage, and has less cost for minor changes in the plate. Any kind of work which can be produced on a flexible package advantageously in roll or web form can be printed economically and well by flexography. R.A.S.

MOSS, FRANKLIN. Seven keys to quality in flexographic printing. Paper, Film and Foil Converter 27, no. 11: 26, 28 (November, 1953).

The author discusses factors in flexographic printing which affect quality and provide for more profitable production and lower-cost operation, including care and attention given to proper planning, rubber plates, inks, prepress preparation, plate cylinders, the printing machine, and pressmanship. R.A.S.

RICH, NORMAN H. Advantages of flexography for cartons. Am. Boxmaker 42, no. 11: 14-15 (November, 1953).

Advantages of flexography, a method of rotary letterpress printing which employs flexible rubber plates and rapid drying fluid inks, are listed. They include ease in handling rubber plates and operation in setting cylinders; reduction of production, down, handling, and clean-up time; low handling, plate, cutting and creasing die, and make-ready costs; and elimination of need for racking by fast drying inks. R.A.S.

PULP

BIALKOWSKY, H. W. Recent developments in sulphite and sulphate pulping. Tappi 36, no. 11: 155-7A (November, 1953).

The author discusses developments in sulfite and sulfate pulping in the Pulp Division, Weyerhaeuser Timber Co. on the Pacific Coast, including the utilization of logging waste, the development of the first hydraulic barker, the construction of the first magnesia-base sulfite system for complete heat and chemical recovery, and the introduction of bleached Douglas-fir kraft market pulp. Mention is also made of the company's policy of integrated forest-crop utilization and sustained-yield forest management and the recent expansion of production facilities. E.S.

DR. M. Sulfate or sulfite papers. Allgem. Papier-Rundschau no. 17: 720-1 (Sept. 3, 1953). [In German] *cf.* B.I.P.C. 21: 394-5.

A brief description of the difference between the sulfate and sulfite cooking processes and the resulting products is given; the common stains for differentiating sulfite and sulfate pulps are listed. 28 references. E.S.

RAMIE

DENIS, R. A. Ramie. Parts I-IV. Melliand Textilber. 34, no. 5: 399-401; no. 6: 493-4; no. 7: 61[r]-17; no. 9: 817-18; no. 10: 912-14; no. 11: 1021-2 (May-July, September-November, 1953). [In German; English, French, and Spanish summaries]

The author presents an extensive review of the ramie problem, including anatomy and properties of the fibers, cultivation and decortication, degumming and spinning, and economic considerations and future trends. 6 tables and 12 references. E.S.

RESEARCH

GALLAY, W. [Moderator] University collaboration in pulp and paper research. Pulp Paper Mag. Can. 54, no. 11: 136-8 (October, 1953).

A brief summary of remarks made by various speakers in the general discussion of representatives from Canadian universities, the National Research Council, the Ontario Research Foundation, the Forest Products Laboratories, and the Pulp and Paper Institute of Canada on research work of interest to the pulp and paper industry is presented. R.A.S.

RESEARCH LABORATORIES

ANON. The Laboratoire Général pour Emballages. Rev. papiers et cartons 16, no. 20: 10-13 (Oct. 15, 1953); Papier, carton et cellulose 2, no. 4: 87 (September-October, 1953). [In French] *cf.* B.I.P.C. 23: 640.

The new French packaging laboratory will be installed at the railway station Auteuil in Paris where large quarters have been placed at its disposal by the French national railways. The aims, facilities, and organization of the new laboratory are outlined. 5 figures, including 3 floor plans in the first and 1 illustration in the second reference. E.S.

JENKINS, J. H. The Forest Products Laboratories of Canada. J. Forest Products Research Soc. 3, no. 4: 9-13, 72 (November, 1953).

Organization, equipment, and personnel of the Canadian Laboratories are described. In addition, a resume is given of important research projects which have been undertaken in past years, as well as work now in progress. The author indicates the broad range of work that is done to help the wood industry do a better job of manufacturing and utilizing wood resources at all levels. 4 figures. E.S.

WULTSCH, FERDINAND. Austria's new institute—its aims. Pulp & Paper 27, no. 11: 49-50 (October, 1953).

The opening ceremonies of the laboratories of the new Institute of Pulp and Paper Technology at the Technical University of Graz, Austria and its facilities and purpose are briefly outlined. 1 illustration. E.S.

RESIN, SYNTHETIC

FRANCISCO, D. M. Silicones in packaging. Modern Packaging 27, no. 3: 149-53 (November, 1953).

Silicone products made by Dow Corning Corp. and their applications, both as abhesives and adhesives, on a variety of materials are described. Silicone is unaffected by temperatures well above the decomposition of paper itself and therefore is used to treat pan liners for baked goods; its abhesive properties make it ideal on kraft slip sheets used between raw rubber stock and core wrappers and backing strips for pressure-sensitive tapes. Silicone coatings are also applied to glass, rubber, and glass cloth making use of the abhesive properties, and to glass cloth and tape in a different form whereby it imparts an adhesive coating; another product, Antifoam A, inhibits the formation of foam. 10 illustrations. R.A.S.

ROOFING FELTS—TESTING

GREENFELD, SIDNEY H. Effects of thermal shock on the durability of asphalt coatings under accelerated test. ASTM Bull. no. 193: 46-50 (October, 1953).

Three asphalts, representative of the major sources of coating asphalt used in the manufacture of prepared roofings in the United States, were exposed to accelerated durability tests without stabilizer and with 30% and 60% of two mineral stabilizers. Four panels of each coating were subjected daily to 21 hours of exposure to the radiation from an enclosed, low-intensity carbon arc, with the introduction of a chilled water spray (40°F.) for three minutes every 20 minutes (17-3 cycle). Two of the four panels with each

coating were also exposed to air at −5° for two hours daily. The use of the 40°-water produced results equivalent to those obtained when both the 40°-water and exposure to air at −5° were employed. 3 tables, 4 figures, and 8 footnotes. E.S.

SAFETY

ANON. Box plant safety record found "consistently unfavorable." Boxboard Containers 71, no. 731: 31-2 (November, 1953).

Statistics published in a report by the Bureau of Labor Statistics show the injury frequency rate for the paperboard container industry in 1951 to be 18.1, which is about 17% higher than the all-manufacturing average of 15.5. Plants manufacturing corrugated or fiber boxes generally had the highest injury frequency rates in the industry; most frequent injuries were in the production department, particularly in corrugating, printing, and cutting operations. 5 diagrams. R.A.S.

DRAPER, J. A. Winder guards. Pulp Paper Mag. Can. 54, no. 11: 239-40 (October, 1953).

Although nip-point accidents have been reduced in recent years through the installation of guards in front of the nip, they have not been entirely eliminated and will occur in the future, as long as it is possible for the hand to reach the inrunning nip. A new guard has been developed at the Port Arthur Division of Consolidated Paper Corp. Ltd. which permits feeling of the winding roll, if necessary, but which does not allow the hand to reach the nip. 3 illustrations. E.S.

NEWBURY, H. E. Ecusta Paper wins Fritz safety trophy for '52. Paper Ind. 35, no. 8: 886-8 (November, 1953).

The safety organization of the Ecusta Paper Corp. of Pisgah Forest, N.C. is outlined. 1 table and 7 figures. E.S.

SALESMEN AND SALESMANSHIP

FRANKLIN, S. W. How to motivate your salesmen. Parts 1 and 2. Paper & Paper Products 95, no. 8: 2-3, 39; no. 9: 2-3, 8-9 (Oct. 20, Nov. 5, 1953); *cf.* B.I.P.C. 24: 225.

Loyalty of a sales manager to his salesmen stands out as the main factor in their relationship and is emphasized as the greatest source of business profit in the author's 20 points for building and maintaining sales morale; the points are outlined. Motivation of salesmen through compensation is considered the basic control available to a sales manager; a checklist is provided for evaluating compensation plans. Compensation plans analyzed include straight commission, straight salary, salary and commission combined, drawing account against commission, salary and commission plus bonus, and profit sharing plan. R.A.S.

VOSMER, ROBERT. Should salesmen be used in collecting accounts? Am. Paper Merchant 50, no. 11: 24-5 (November, 1953).

The author discusses whether the collecting of bills should be done by salesmen or credit department personnel; the choice can depend on the different circumstances and problems of each individual concern and its customers, the size of the account, customer preference, locality, and the attitude of the salesman. R.A.S.

WHEELWRIGHT, WILLIAM BOND. Some sidelights on the educa-

tion of paper salesmen. Paper & Paper Products 95, no. 10: 2-3, 23 (Nov. 20, 1953).

The author discusses his experiences with methods used for the training of paper salesmen since his entrance in the field 50 years ago. The process of education has changed more in the past 10 years than in the previous 40, because of the growing development on the part of individual companies to prepare and administer training courses for beginners. Such elements as basic technical knowledge, testing procedures, field trips, participation by mill experts, and reference sources—which should be included in such a training course—are discussed. R.A.S.

SEMI-CHEMICAL PULPING PROCESS

ANON. Semi-chemical pulp for white paper; a New York process. Pulp & Paper 27, no. 9: 38-9, 41-2 (Aug. 10, 1953); *cf.* B.I.P.C. 23: 825.

A description of the operations in the neutral sulfite semichemical pulp mill of the West Virginia Pulp and Paper Co. at Mechanicville, N.Y. similar to that in the previous reference is given. 1 flowsheet and 8 illustrations. R.A.S.

CHEMICAL ENGINEERING. Neutral sulfite semi-chemical pulping. Chem. Eng. 60, no. 11: 244-7 (November, 1953).

A simplified pictured flowsheet of the neutral sulfite semichemical (NSSC) process is presented, as it is being carried out in the newly completed pulp mill of the West Virginia Pulp and Paper Co. at Mechanicville, N.Y. (*cf.* B.I.P.C. 23: 825). 1 flowsheet and 8 illustrations. E.S.

MCGOVERN, JOHN N. Recent developments in semichemical pulping. Tappi 36, no. 11: 154-5A (November, 1953); Southern Pulp Paper Mfr. 16, no. 12: 36-7 (December, 1953). [Abridgments]

The author gives significant data in the history of the process, the number of mills using it and their location, and requirements in chemicals and power, and lists digesting and bleaching procedures employed and pulp strength properties and uses. 9 tables. E.S.

SETUP BOXES

MINNARD, EDWARD, and MEJEUR, U. K. The manufacture of set-up paper boxes. Paper Trade J. 137, no. 20: 160, 162-4 (Nov. 13, 1953).

The setup box is defined and described; manufacturing methods are made up of cutting and scoring, corner cutting and staying, formation of box lids, and covering. Materials of manufacture and for cover paper are listed. This is one in a series of industrial lectures on paper and paperboard converting presented at Western Michigan College. 16 illustrations. R.A.S.

SHIPPING CONTAINERS

A.V.G. Container problems of the Armed Forces. Activities Rept. Research and Develop. Associates, Food and Container Inst. 5, no. 3: 221-3 (October, 1953).

Problems in flexible containers (including low-temperature asphalt for multiwall bags, waterproof case liners for clothing, sealed waterproof case

liners for leather products, sealed waterproof case liners for soap and naphthalene flakes, and preservation and packaging by the use of volatile corrosion inhibitors) and problems in rigid containers (including the development of fiberboards for containers with good low-temperature performance characteristics, selective reinforcement of fiberboard boxes, and vacuum requirements for canned foods) are discussed. R.A.S.

GARRISON, NORMAN W., JR. Fabrication of corrugated shipping containers. Paper Trade J. 137, no. 20: 137-42 (Nov. 13, 1953).

A general discussion of the fabrication of corrugated shipping containers includes sections on equipment used, regular slotted containers, container design, and testing. This is one in a series of industrial lectures on paper and paperboard converting presented at Western Michigan College. 1 table and 13 figures. R.A.S.

GARRISON, NORMAN W., JR. Fabrication of solid fibre containers. Paper Trade J. 137, no. 20: 143-6 (Nov. 13, 1953).

Production equipment used, weatherproof solid and corrugated fiber containers, and testing of the various board combinations that make up the fiber container are discussed. This is one in a series of industrial lectures on paper and paperboard converting presented at Western Michigan College. 4 tables and 7 illustrations. R.A.S.

SMITH, C. O. What we expect of a corrugated shipping case. Tappi 36, no. 11: 166-7A (November, 1953).

The author describes the handling operations in the distilling industry and the requirements of a shipping case to withstand the operations. Present ways in which the requirements are sometimes not met are outlined as insufficient structural strength for stacking and storage in humid conditions, inability of case to retain shape in humid conditions, and warped partitions. R.A.S.

SHIPPING CONTAINERS—FIBER DRUMS

MATHER, GLENN. Fibre drums. Paper Trade J. 137, no. 20: 166-8, 170-2, 174 (Nov. 13, 1953).

Qualifications for fiber drums as set forth by freight regulations and federal specifications are listed. A short history of the industry, manufacturing data, closures (sealing disks and lap seam), fiber pails, types of contents (hot-poured materials that solidify on cooling, liquids, semiliquids, explosives, and chemicals), barrier materials, linings, treatments, and insulation are discussed. This is one in a series of industrial lectures on paper and paperboard converting presented at Western Michigan College. 1 table and 1 illustration. R.A.S.

SHIPPING CONTAINERS—MULTIWALL BAGS

BURNS, GEORGE N. Multiwall bags. Paper Trade J. 137, no. 20: 181-5 (Nov. 13, 1953).

The author describes the manufacture of different varieties of sewn or pasted, valve, or open-mouth constructions of multiwall bags. This is one in a series of industrial lectures on paper and paperboard converting presented at Western Michigan College. 6 illustrations. R.A.S.

SHIPPING CONTAINERS—TESTING

SCHULER, S. C. Impact-load factor. Modern Packaging 27, no.

3: 154-6, 222 (November, 1953); J. Inst. Packaging 2, no. 19: 255-9 (Annual no., 1953).

Aspects in the design of the equipment used in Britain by the R.A.F. and Naval Aviation for shock protection or cushioning packaging of electronic equipment to be considered are the "g" factor (sustained loading factor likely to occur in flight) and the impact-load factor (the ratio of the maximum dynamic loading to the static load which the item can survive under drop-test conditions). Packaging considerations should include the weight and dimensions, maximum shocks to which the package may be subjected, and the shock or impact-load factor of the equipment. Results of experiments are presented which give advantages and disadvantages of four cushioning materials (tension springs, preloaded compression springs, expanded rubber, and rubberized hair). 6 illustrations. R.A.S.

SLIME PREVENTION

MARDON, J., and PEDDER, D. Use of a soluble mercurial in slime control. Pulp Paper Mag. Can. 54, no. 11: 131-3 (October, 1953); *cf.* B.I.P.C. 22: 692.

The distribution of a soluble mercurial, ethoxy ethyl mercury acetate (I), after crash dosage in a closed paper mill white-water system has been determined by chemical and microbiological methods. During the same period the common fungi and bacteria of the system were determined. Even though the compound is very soluble compared with phenylmercuric acetate (II), reaching in solution to all parts of the system, it is still adsorbed onto the fibers. On account of its comparative instability under acid white-water conditions, the mercurial in solution rapidly loses its biological activity. Compared with (II), (I) was found to be less fungicidal at equivalent concentration; however, it exhibits fungistatic properties. A slime-control system based on crash dosages of (I) alternately with (II) is considered to be preferable to the use of (II) alone. 5 tables and 1 reference. E.S.

SPONGES, ARTIFICIAL

STROCK, C. L. O-CEL-O. Progress thru Research 8, no. 1: 1-5 (Fall, 1953); *cf.* B.I.P.C. 22: 693.

The process for manufacturing cellulose sponges employed at the O-CEL-O plant, Buffalo, N.Y. is outlined; industrial and production research now in progress at the company is aimed toward finding new and modified cellulose-sponge structures for other fields and improvements in processes and use of by-products. The Cel-O-Sorb surgical sponge is a new product of the company claimed to do the work of about 10 ordinary gauze sponges. 1 picture flowsheet and 5 illustrations. R.A.S.

STANDARDIZATION

IVERSEN, C. The block-bottom bag and its standardization. Allgem. Papier-Rundschau no. 17: 725-7 (Sept. 3, 1953). [In German]

The standard sizes of block-bottom bags as used in prewar Germany are compared with those to be introduced into the Russian zone which are based on the Polish standards. In the German standards, paper quality, basis weight, and possible lining are not prescribed, but their selection is left to the judgment of the manufacturer or buyer. 7 tables and 2 figures. E.S.

STARCH

KERR, R. W., and HOBBS, K. C. Substituted silyl derivatives of starch. Ind. Eng. Chem. 45, no. 11: 2542-4 (November, 1953).

This work was done to extend the application of starch into the field of thermosetting and thermoplastic resins. The primary objective was to produce a silicon derivative of starch which would be soluble in cheap organic solvents such as hexane, but insoluble when deposited films or coatings were cured, as by heating. Three classes of substituted silanes were found to react with starch. Monofunctional substituted silanes such as trimethylchlorosilane produced soluble starch derivatives. Bifunctional silanes such as diphenyl-, dichloro-, and di-*tert*-butoxydiaminosilane produced insoluble thermoplastic resins. Bifunctional silanes in which there is a decided difference in the reactivity of the substituted groups, such as diphenylbutoxychlorosilane, produced a starch derivative which, as made, was soluble in organic solvents but when cast into films and additionally heated was insoluble in all neutral solvents. The principal significance of this work is that the application of the abundant raw material (starch) may be materially extended into the field of plastics and coatings by derivatization with substituted silanes. 3 references. E.S.

ULMANN, M. Chromatographic investigations of acid hydrolyzates of potato starch. 2. Makromol. Chem. 10, no. 3: 221-34 (September, 1953). [In German; English summary] *cf.* B.I.P.C. 24: 53.

When potato starch, amylose, or amylopectin is hydrolyzed with hydrochloric acid, and paper chromatograms are prepared of samples taken at 10-minute intervals, glucose is the first sugar found, later maltose, and finally maltotriose. A comparison of chromatographic separation on paper and on the alumina column shows that considerable modification of amylose or amylopectin by the acid occurs before low-molecular weight sugars appear. In diastatic degradation, maltose and maltotriose appear before glucose. Maltotriose is believed to be preformed in the starch molecule and not a reversion product. 4 tables, 2 figures, and 13 references. K.W.,Jr.

STATISTICAL METHODS

PURCELL, WARREN R. The quality control engineer in the pulp and paper industry. Ind. Quality Control 10, no. 3: 13-18 (November, 1953).

A quality control program in the industry is a co-ordinated service function for long-term planning whose purpose is to minimize losses resulting from defective manufacture. These losses are classified in two general categories, loss of good will as a result of defective products and excessive internal costs incurred to prevent the former from happening. A typical quality control organization and duties of the various persons involved are described. An application of control charts is outlined in which the extremes of test results from front, center, and back of the reel are plotted to indicate on a single chart both variability and control tendency. A continuous record of machine adjustments is made on the chart. The use of multiple-correlation to evaluate the importance of product control variables is illustrated, together with a chart derived from the regression equation from which the proper choice of combinations of two variables may be made to correct for changing raw-material levels. 2 tables, 4 diagrams, and 4 references. R.A.S.

STOCK PREPARATION

MERIKANTO, REIJO. Pulp screening and its application at Oulu Oy. Paper and Timber (Finland) 35, no. 10: 383-92 (October, 1953). [In Finnish; English summary]

The author describes the different procedures employed in the postwar period for improving the cleanliness of the mill's sulfate pulp. Beginning with the raw material (more than 40% of the wood is at times supplied by eight different sawmills), uniformity of chips was first secured; next was an improvement in the digester circulation. New Kamyr knotters were installed which do not whip the screenings. Experiments were made with different sizes of the perforations in the Biffar screen plates. For the treatment of the screened pulp a Dilts Hydrafiner was installed, particularly for the elimination of fiber bundles; one half to two thirds of the shives were thereby removed without change in the beating degree of the pulp during treatment. Refining of the tailings was also introduced. Hydrafiners were not found suitable for this purpose; better results were obtained with an Asplund refiner. Experiments were also carried out with a Finnish Valmet mill. The semibleached pulp passes a four-inch Vortrap which removes about 400 grams of principally inorganic impurities/ton of pulp. Experiments with the American Centri-Cleaner are still in progress. The foremen control the cleanliness of the pulp with the aid of different instruments during all processing stages; the laboratory also takes part in this control work. 7 tables and 10 figures. E.S.

STRAINS AND STRESSES

FÖPPL, LUDWIG. Photoelasticity. Das Papier 7, no. 21/22: 413-15 (November, 1953). [In German; English and French summaries]

The fundamentals of plane photoelasticity (used for testing the safety of constructions, etc.) are explained, and some examples of isochromatic figures are discussed. Lap joints in one piece are compared with those consisting of several sections (as used, for instance, in digester constructions). 4 figures. E.S.

STRAW

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY. *Fibrous Agricultural Residues Committee.* Straw specifications and grading. Tappi 36, no. 11: 160-9A (November, 1953).

The discussion which took place at the 1952 Fall meeting of the committee is reprinted; U. S. standards for straw are defined. The general problems considered in the discussion were inspection, delivery (railroad and truck), spontaneous combustion, covering of wheat-straw ricks, bale size and wires, moisture and weed content, and use for corrugating pulp. R.A.S.

STREAM POLLUTION

HUBAULT, ETIENNE. What every industrialist suspected of causing stream pollution should know. Papier, carton et cellulose 2, no. 4: 80-2, 85-7 (September-October, 1953). [In French]

The author discusses the different legal aspects of stream pollution in France and the means for defense at the disposal of the alleged offender. 1 table, 1 illustration, and 12 footnotes. E.S.

MURDOCK, HAROLD R. Industrial wastes. Ind. Eng. Chem. 45, no. 11: 102A, 104A, 106A (November, 1953).

Since 1935 sulfite capacity has remained practically constant, whereas the sulfate industry has shown tremendous growth; stream pollution connected with the sulfite process is given as one of the significant reasons for the nonexpansion of the former. The problem of dealing with the spent sulfite liquor and some of the successful solutions to date are discussed. The author predicts further developments along these lines stimulated by process competition and possible economies. 1 table and 1 figure. E.S.

SULFATE MILLS

ANON. The Howe Sound Mill, one of biggest timber cos. now in pulp. Pulp & Paper 27, no. 11: 87-8, 90, 92, 94 (October, 1953).

Improvements and expansion in the Howe Sound Pulp Co. Ltd., Port Mellon, B.C., which have increased the daily capacity from 130 to 175 tons of unbleached sulfate pulp, are described. The first stage of the operation was repair and renovation of existing mill equipment; the second, modernization with the installation of new equipment in the wood preparation plants (Canadian Sumner vibrating chip screen, six high concrete silos, two Link-Belt 36-inch trippers, and a Merrick automatic weightometer), pulp mill (two additional Vancouver Iron Works digesters, six Esco indirect heaters, a Swenson Evaporator Co. blow steam surface condenser, and Foxboro automatic sulfate digester steaming controls), washing plant (a two-stage 9 by 12 Swenson-Nyman pulp washer and two Jonsson pulp knotters), and in the screening, pulp drying, and chemical plants. Chip production for the mill, which is done at the Eburne Sawmills Division of Canadian Forest Products Ltd., is described; the Port Mellon mill has no woodroom. 16 figures. R.A.S.

ANON. More Harmac pulp; expansion makes improvement possible. Pulp & Paper 27, no. 12: 67-9, 71 (November, 1953); Southern Pulp Paper Mfr. 16, no. 11: 48, 50, 52, 54 (November, 1953); Tappi 36, no. 11: 106A, 108A, 110A, 112A, 114A (November, 1953); Fibre Containers 38, no. 10: 72, 74, 76 (October, 1953); Paper Mill News 76, no. 46: 94, 96, 98, 102 (Nov. 14, 1953); *cf.* B.I.P.C. 24: 230.

Brief descriptions are given of the expansion of the Harmac mill of MacMillan & Bloedel Ltd. with condensed information corresponding to that presented in the previous reference; however, the five articles are not identical. 14 figures in the first reference; 5 illustrations in the second, third, and fifth; and 3 illustrations in the fourth. R.A.S.

STEPHENSON, J. N. Harmac mill doubles bleached sulphate production. Pulp Paper Mag. Can. 54, no. 11: 110-18 (October, 1953); *cf.* B.I.P.C. 24: 230.

A description of the mill and equipment installed in the recent expansion of the Harmac mill of MacMillan & Bloedel Ltd., similar to that in the previous reference, is given. A list of major equipment and suppliers is appended. 10 illustrations. R.A.S.

SULFITE PROCESS

SAMUELSON, OLOF, and WENNERBLOM, AXEL. The effect of a disintegration during sulfite cooking. Svensk Papperstidn. 56, no.

19: 745-50 (Oct. 15, 1953). [In English; German and Swedish summaries]

Previous investigators have established that the disintegration of wood chips during the sulfite or sulfate cook (or any mechanical damage to the wood chips) results in pulps with low strength properties unsuitable for papermaking. However, only scant data are available on the effect of disintegration on the chemical properties of the pulp. The purpose of the present study was a comparison of the results obtained in the sulfite digestion of sprucewood chips and defibered pulps to establish yields and some chemical properties of the resulting products. The chips were first cooked until sufficiently soft to be disintegrated readily. Some of the samples were then defibered in a disintegrator and the cooking was continued as a second step. The control samples were cooked in the usual way without disintegration. The dissolution of lignin and pentosans and particularly the degradation of cellulose was found to proceed much faster in the two-stage process than during the standard sulfite cook, which indicates that the free fibers are more accessible to the cooking liquor than those held together in chips. However, the difference in accessibility resulting from the defibering treatment is not the same for all components in the fiber. The rate of degradation of the cellulose as well as the rate of dissolution of the pentosans is regulated principally by the pH in the fiber; the hydrogen-ion concentration has a dominating influence upon the rate of dissolution of the lignin. The differences in yield of bleached and unbleached pulps were found to be small in both cases. When the cooking time after defibering was short, yields have been obtained which, compared at constant viscosity, are slightly higher than in cooks without disintegration. On prolonged cooking, the conditions seem to be reversed, and the yields of bleached pulps have in several series been slightly lower in two-step cooking with disintegration. The fibers of the pulps obtained with two-stage cooking do not exhibit any balloon swelling after treatment with cuprammonium solution, which indicates that the outer layers of the fibers have been destroyed. Such pulps are unsuitable for papermaking but dissolve more readily after emulsion xanthation. The attack upon the outer layers of the fibers facilitates the dissolution which is therefore not caused only by a depolymerization of the cellulose. 2 tables, 10 figures, and 15 references. E.S.

SULFITE PROCESS—AMMONIA BASE

HULL, JAMES H. Ammonia versus calcium base; evaporation and burning NH_3. Pulp & Paper 27, no. 9: 68, 71-2 (Aug. 10, 1953); *cf.* B.I.P.C. 24: 55-6.

The author summarizes the pilot-plant work with the evaporation, burning, and sulfur recovery from spent ammonia-base liquor at the Lebanon, Ore. mill of Crown Zellerbach Corp. and describes the full-scale plant based on the pilot-plant design. The latter, however, has not been operating a sufficiently long time to obtain any reliable data; the flowsheets for both are essentially the same. The spent liquor is collected in a sump and pumped to a storage tank, and from there to the evaporator. The pilot plant used a single-effect evaporator and the full-scale plant uses one with two effects. From here, the liquor with 50% solids flows to a storage tank from where it is pumped to a smaller tank which supplies the two boilers under which the liquor is burned in steam-atomizing burners. One of the boilers is equipped for sulfur recovery; the system consists of one cooling and two absorption towers. An 80-85% sulfur recovery is expected from the new installation, also the provision of sufficient steam to cover the evaporating operation.

E.S.

SULFITE WASTE LIQUOR

HUNTER, R. E., TRACY, JOHN, CUTTS, R., YOUNG, R. E., OLIN, J., and MCCARTHY, JOSEPH L. Density, viscosity, specific heat, thermal conductivity, and Prandtl number versus concentration and temperature. Sulphite waste liquor. III. Tappi 36, no. 11: 493-7 (November, 1953); *cf.* B.I.P.C. 21: 585.

Spent sulfite liquor density, viscosity, specific heat, and thermal conductivity values have been collected from the literature or determined experimentally at various temperatures and concentrations of dissolved solids. "Best" average values of these properties and of Prandtl numbers are proposed and are recommended for use in engineering design calculations. Examples are given showing applications of the data to design of fluid-flow and heat-transfer equipment. 2 tables, 5 diagrams, and 26 references. E.S.

WELEBER, FRED J. Utilization of sulfite spent liquor as road binder. Proc. Fourth Ann. Ind. Waste Conf., State Coll. of Washington: 33-5 (1952).

Experiments with spent sulfite liquor on county roads in Clackamas County, Ore. are described. The treatment varied from light applications for dust control to heavier treatments for consolidating the road; the results were in general satisfactory. Treatment with liquor prior to a one-lift oil application proved to be one of the unexpected successes of the work. Compaction, gradation of road aggregate, and cost of treatment are discussed briefly. E.S.

SULFUR

ANON. Our expanding sulphur picture. Can. Chem. Processing 37, no. 10: 24, 26, 28 (September, 1953).

Data on the increasing use of sour gas and pyrites in Canada are presented, which show that the domestic production will increase in 1955 from the present 35% to 60% of all sulfur required in the country. The pulp and paper industry uses over 50% of the entire Canadian consumption. It is hoped that Canadian sulfur production will eventually cover the country's entire needs. 3 tables. E.S.

CADENHEAD, A. F. G. Sulphur process by Mines Branch, Ottawa uses iron sulphide sources. Can. Chem. Processing 37, no. 10: 106 (September, 1953).

A new process for the production of elemental sulfur has been developed which employs oxygen and iron sulfide flotation concentrates, such as pyrrhotite, of which huge quantities are available in Canada. The oxygen is passed into a slurry of finely ground pyrrhotite suspension in an autoclave; the selective oxidation of iron at controlled temperature and pressure gives a pure sulfur. Detailed information of the process will be given as soon as the patents have been issued. E.S.

SULFUR DIOXIDE

ANDERSON, T. T., and BOLDUC, R. FluoSolids roasting of zinc concentrates for contact acid. Chem. Eng. Progr. 49, no. 10: 527-32; discussion: 532 (October, 1953).

The successful development of a Dorrco FluoSolids roaster for zinc concentrates is described; the resulting sulfur dioxide gas is used in a metal-

lurgical-type sulfuric acid plant of the Aluminum Company of Canada at Arvida, Que. 1 table, 1 flowsheet, and 4 figures. E.S.

SWELLING AND HYDRATION

STAUDINGER, HERMANN, and EICHER, THEO. Macromolecular compounds. [386] Cellulose. [115] Swelling and inclusion in the case of cellulose and the lower fatty acids. Makromol. Chem. 10, no. 3: 254-60 (September, 1953). [In German; French summary] *cf.* B.I.P.C. 24: 269.

Formic acid swells dry cellulose, i.e., breaks the hydrogen bonds between cellulose molecules. Propionic and butyric acid cannot produce this result. However, if swelling is accomplished by wetting with water, these acids can replace the water and, when the cellulose is dried, prevent formation of the bonds by their presence or inclusion. Acetic acid is intermediate. It swells cellulose gradually when cold, rapidly when warmed. It can also be included. Both swollen cellulose and inclusion celluloses are more reactive than ordinary dry cellulose. The test used for reactivity is acetylation with acetic anhydride and perchloric acid catalyst in benzene. 1 table, 7 figures, and 8 footnotes. K.W.,Jr.

TESTING, GENERAL

ROBERSON, W. H. [Moderator] Analytical tools available to the paper industry. Tappi 36, no. 11: 157-9A; discussion: 159A (November, 1953).

Abridgments of papers presented at a panel discussion are given by the following authors and titles: Kenyon, W. C. Chemical analysis using infrared and ultraviolet radiation, p. 157-8A; Markwood, W. The use of Instron tensile instrument for the study of the stress-strain properties of paper, p. 158A; Barber, E. J. Defining the surface smoothness of paper with the Brush surface analyzer, p. 158A; Fox, W. E. X-ray diffraction as applied to papermaking problems, p. 158-9A; and Hock, Charles W. Microscopical studies of rosin sizing, p. 159A. R.A.S.

VA-PURGE PROCESS

SCHMITT, PAUL J. Va-Purge process and its effects. Pulp & Paper 27, no. 9: 84 (Aug. 10, 1953); *cf.* B.I.P.C. 24: 57-8.

The main barrier to more extensive experimental work with the Va-Purge process (I) in many mills is the lack of satisfactory equipment, particularly lines and pumps for very rapid introduction and withdrawal of steam and liquor. For combining (I) with vapor-phase cooking (withdrawal of liquor after chips have been penetrated and carrying out the cook with only vapor surrounding the chips) also requires adequate facilities. However, the reduced time required to reach cooking temperatures may justify the required changes. Continuous cooking also appears now as a possibility in mills where it was not practical before. The importance of (I) may lie in the known techniques it makes practical rather than in any improvements it offers by itself. E.S.

VOCABULARY, TECHNICAL

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY. Standard terms used in the sulphate pulping process. Tappi 36, no. 11: 170A (November, 1953).

A proposed revision of TAPPI Official Standard O 400 p-44 is presented. E.S.

WASTE

SHEPARD, DONALD C., JR. Waste control system at Menasha. Fibre Containers 38, no. 10: 44, 49-50, 53, 56 (October, 1953).

The two waste bonus systems introduced at Menasha Wooden Ware Corp. for the reduction of the waste percentage are discussed; the one covers the corrugator crew and crane operator where about 70% of the waste originates, and the other is participated in by supervisors in the rest of the plant where the remaining 30% of the waste originates. Details of the implementation of the systems, segregation of waste and charging against departments, and calculation of the bonus are given; the forms used are described. 6 illustrations and 5 examples of forms. E.S.

WASTE LIQUOR

SADLER, HANS, BELLAK, FRITZ, and RÖDER, HERBERT. Comparative studies of the fuel values of spent sulfite liquors and sulfate black liquors. Das Papier 7, no. 21/22: 416-24 (November, 1953). [In German; English and French summaries]

In laboratory experiments, the spent liquors from spruce sulfite and sulfate cooks (including all wash waters) were quantitatively separated from the pulp and concentrated, and the fuel value of each was established. The purpose of the study was the determination of the influence of the ash content in spent sulfite (I) or black (II) liquor upon the respective fuel values. (II) contains more inorganic substances than (I); hence its fuel value is up to 30% lower. The following mean values were established for the fuel value of the water-free dry substance of both liquors: (II) maximum 3450 and minimum 3250 kg.-cal./kg.; and (I) maximum 4370 and minimum 4170 kg.-cal./kg. However, under drastic cooking conditions—assuming the identical cooking degree of pulp, a lower pulp yield is obtained with sulfate cooks with more organic substance dissolved in (II) than in (I), so that under these conditions (II) gives a higher fuel value than (I). The relationship between fuel value, ash content, and water content of the waste liquor has been established. 5 tables, 10 figures, and 34 references. E.S.

WASTE PAPER

BERTIN-ROULLEAU, J. The recovery of waste paper. Rev. papiers et cartons 16, no. 19: 18-19 (Oct. 1, 1953). [In French]

Statistics on the consumption of waste paper in the United States for 1941-51 and the important countries in Europe for 1949-51 are presented. 3 tables. E.S.

WATER-MARKS

REFLEX-PAPIER-FABRIK FELIX HEINR. SCHOELLER GMBH, *Düren*. Genuine and artificial watermarks. Allgem. Papier-Rundschau no. 17: 735-9 (Sept. 3, 1953). [In German]

The manufacture of genuine (continuous, localized, and staggered), impressed, and embossed watermarks is described. 5 diagrams and 7 samples. E.S.

WOOD—CHEMISTRY

MITCHELL, R. L., SEBORG, R. M., and MILLETT, M. A. Effect of heat on the properties and chemical composition of Douglas-fir wood and its major components. J. Forest Products Research Soc. 3, no. 4: 38-42, 72-3 (November, 1953).

Douglas-firwood cross sections and extractive-free sawdust (I) were heated at various temperatures for varying time periods. Isolated components, e.g., Klason lignin, α-cellulose, and hemicelluloses were similarly treated. Heating was carried out both in a closed system under pressure and in an open system with and without the circulation of air or nitrogen. Losses in weight and decomposition products (carbon dioxide, water plus other condensable distillates, and tars not volatile at 110°C.) were determined, and certain analyses were made on the residual products. In general, heating in the closed system effected far greater losses than did open-system heating. The highest losses were noted in the case of α-cellulose, and (more especially) of the hemicelluloses. Although the original paper must be consulted for full details, the following are some of the results obtained on heating: (I) gave rise to substances soluble in alcohol-benzene and in hot water. At lower heating temperatures the alkali solubility of the products from (I) rose (especially in case of heating in an open system). The alkali-soluble material was produced somewhat at the expense of the lignin, but largely at the expense of the holocellulose of (I) which, in extreme cases, dropped from an initial 72% to 48.7%; there was also a drastic degradation of the α-cellulose (none of which was found after heating 8 days at 160° in an open system). On heating at higher temperatures the apparent lignin values increased, and this rise seems coupled with a decrease in holocellulose content. Pentosan values dropped sharply, but methoxyl and evolved carbon dioxide varied relatively little with increases in heating. Ligninlike materials were also formed from α-cellulose on heating in either system. The experimental values for holocellulose content when added to the sum of the loss in weight, the material soluble in alcohol-benzene, and the lignin gave values approaching 100%. The present results are in harmony with those of Merritt and White (*cf.* B.I.P.C. 13: 341-2) and Runkel and Wilke (*cf.* B.I.P.C. 22: 56-7). 10 tables, 1 figure, and 10 references. L.E.W.

WOOD—DECAY

MACLEAN, H., and GARDNER, J. A. F. Some chemical and plastic properties of western red cedar butt rot. J. Forest Products Research Soc. 3, no. 4: 35-7, 72 (November, 1953).

Western red cedar cubical butt rot has been tested as a substitute for walnut shell flour currently used as a filler in plywood glues. It was found that the butt rot contributed to the glue-line strength, being an extender and not just a filler. However, its use caused the development of very high viscosities in the resin mixture. Attempts to prevent the high viscosity, which would cause difficulty in spreading the glue, by the use of dispersing agents and caustic precooks were unsuccessful. Chemical studies on the butt rot provided strong evidence that it was an isolated lignin—produced by the preferential fungal decay of lignocellulose—and indicated that its high alkali solubility and reactivity were due to its high content of phenolic hydroxyl groups. It was found that the alkali-soluble portion (up to 65% of the dry weight) of the butt rot would copolymerize with synthetic phenol-formaldehyde resin. It was also found that this portion of the butt rot could be substituted directly for 50% of the phenol-formaldehyde resin normally used to produce plywood glues which, on the basis of this laboratory experiment, were equal in viscosity, strength, and durability characteristics to the two commercial glues used for purposes of comparison in this test. 5 tables and 9 references. E.S.

WOOD—EXTRACTIVES

BLACK, R. A., ROSEN, A. A., and ADAMS, S. L. The chromatographic separation of hardwood extractive components giving color

reactions with phloroglucinol. J. Am. Chem. Soc. 75, no. 21: 5344-6 (Nov. 5, 1953).

By application of paper chromatography, four aromatic aldehydes giving phloroglucinol color reactions have been isolated in the ethanol extracts of oak hardwood. They have been identified as vanillin, syringaldehyde, coniferaldehyde, and sinapaldehyde. In general, both coniferaldehyde and sinapaldehyde were found to exist in other hardwoods examined, whereas only coniferaldehyde was found in soft woods. The lignin color reaction with phloroglucinol may thus be associated with sinapaldehyde as well as coniferaldehyde. 3 tables and 17 footnotes. E.S.

WOOD DISTILLATION

GREAVES, C., and SCHWARTZ, H. The chemical utilization of wood. Can. Chem. Processing 37, no. 10: 42, 44 (September, 1953).

The author reviews briefly the destructive distillation of wood as practiced in Canada, principally Ontario and Quebec, including hardwood species employed, processes, kilns, and products (charcoal and derived products). E.S.

WOOD ROOM

ZIGMUND, H. F. Mosinee installed new wood room. Paper Mill News 76, no. 46: 108, 110, 112 (Nov. 14, 1953).

A detailed description of the new woodroom at Mosinee, Wis. is given, which is designed to produce enough chips to maintain a pulp production rate of 200 airdry tons/day in two eight-hour shifts. The present daily pulp production is 150 tons of unbleached sulfate. The woodroom includes a hot pond (heated to 65°F. in winter), two Fiber Making Process suspended-chain-type barking drums, a sorting deck, and a 10-knife chipper; the knives are ground once per shift. The chips are fed to vibrating screens, and the oversize chips are returned to a six-knife rechipper. All waste waters from wood showers and hot pond are passed through a North filter before the water is discharged to the river; about 90% of the solids are removed. 1 flowsheet and 4 illustrations. E.S.

WOOD WASTE

CARPENTER, ROSWELL D. Heavy pine sawmill waste—a supplement to round wood for pulp production. J. Forest Products Research Soc. 3, no. 4: 43-4, 73-4 (November, 1953); Southern Pulp Paper Mfr. 16, no. 12: 94-6 (December, 1953).

The current status of use of heavy pine sawmill waste is described and the probable part that such waste can play in the over-all southern pulp production is analyzed. The ultimate feasible use of this waste for pulp is placed at 55%. 1 table and 3 footnotes. E.S.

X-RAY RESEARCH—SMALL-ANGLE SCATTERING

HEIKENS, D., HERMANS, P. H., VAN VELDEN, P. F., and WEIDINGER, A. X-ray small angle scattering of ramie and rayons. J. Polymer Sci. 11, no. 5: 433-46 (November, 1953). [French and German summaries]

The small-angle scattering of ramie and of 25 highly oriented rayon samples of widely different prehistory has been examined with monochromatic radiation in a vacuum camera in both the airdry and the water-swollen condition. All intensity curves are given. For some rayons the curves show dis-

tinct maxima or inflection points in either the swollen or the dry condition which seem to be indicative of the existence of a maximum of relatively low intensity superimposed on a normally descending small-angle intensity curve. The Bragg spacing corresponding to these maxima lies close to 80 A. for the swollen and to 50 A. for the dry fibers. Other specimens either do not show these superimposed maxima or show only faint indications of their occurrence. The existence of maxima (particularly pronounced in Fortisan, Fiber G, Super Cordura, and Celanese K 36) seems to demonstrate that in some rayons a part of the fiber substance has a micellar structure of unexpectedly high regularity and with average interparticle distances given by the Bragg spacings indicated. The intensity curves of those swollen specimens which did not exhibit a maximum, when evaluated by the Guinier method for dilute systems, assuming parallel cylinders as the basic structure, yield figures between 35-55 A. for the diameter of the cylinders. Evaluation of the intensity curves according to an approximation suggested by Kratky (based on the picture of closely packed lamellas) points to the existence of a preferred spacing of the same order of magnitude (~40 A.) for the dry and of ~60 A. for the swollen fibers. No clear correlation between small-angle scattering features and other properties of the rayons has been detected. 5 tables, 30 figures, and 9 references. E.S.

HEYN, A. N. J. The determination of microcrystallite size by the small-angle x-ray technique in rayons. Textile Research J. 23, no. 11: 782-7 (November, 1953).

The scattering of x-rays at small angles by various rayons of high orientation was investigated at various degrees of swelling. The occurrence of inflection points or maxima-minima in the scattering curves of these fibers at certain degrees of swelling is explained by interparticle interference in the densely packed condition. The experimental conditions necessary for a reliable determination of particle size (diameter of microcrystallites) for these fibers are derived from the results obtained, and particle sizes determined by this method are given. 8 figures and 7 references. E.S.

Patent Section

Although the abstracts of the United States and Canadian patents are prepared from the patents themselves, the initial selection of the patents to be abstracted is made from the Patent Gazette *and the* Canadian Patent Office Record *and, therefore, it is possible that the patent section will not contain all patents of potential interest to the industry. In so far as possible, an attempt will be made to indicate patents issued in both countries.*

The patent abstracts are listed under the various headings currently used for the abstracts of periodical articles.

Printed copies of United States patents can be obtained from the Commissioner of Patents, Washington, D.C.; the price is 25 cents per copy. Canadian patents up to and including December, 1948, are available only as manuscripts or photostatic copies, and an estimate of the cost of a patent should be obtained from the Commissioner of Patents, Ottawa, Canada, in advance of the order. With January, 1949, printed copies of Canadian patents are available at 25 cents per copy of less than 50 sheets of printed matter. For patents of 50 sheets or over, the price is $1.00 per copy. Beginning with volume 21, the Canadian patents are abstracted from the complete specifications.

ADHESIVES

ERICKS, WALTER P. Wallboard adhesive and method. U. S. patent 2,657,163. Filed March 6, 1951. Issued Oct. 27, 1953. 13 claims. Assigned to The Upson Company. [Cl. 154-141]

An aqueous dispersion of acid-converted starch is cooked with 0.1 to 0.3% by weight of aluminum sulfate to form an adhesive with water-resistant characteristics and a high initial tack, particularly suited for bonding sheets of cellulose fibers together to produce a laminated product. The addition of a dispersing agent such as a sodium sulfo-succinate ester (e.g., Aerosol OT) reduces the time required for dispersal of the starch; small amounts of sodium pentachlorophenate may be added as a fungicide. W.B.W.

EVANS, JOHN L., and MICUCCI, DOMINIC D. Dilute alkali dispersible hot melt bookbinding adhesives. U. S. patent 2,657,187. Filed Dec. 8, 1949. Issued Oct. 27, 1953. 7 claims. Assigned to E. I. du Pont de Nemours & Company. [Cl. 260-30.8]

This is very similar to U. S. patent 2,657,189 (Oct. 27, 1953; *cf.* abstract below), except that 0.5-2 parts of a liquefying softener consisting essentially of a methylated diaryl sulfone is added to the adhesive. W.B.W.

PINKNEY, PAUL S. Dilute alkali dispersible hot melt bookbinding adhesives. U. S. patent 2,657,189. Filed Dec. 8, 1949. Issued Oct. 27, 1953. 3 claims. Assigned to E. I. du Pont de Nemours & Company. [Cl. 260-33.8]

A hot-melt flexible adhesive for bookbinding that is dispersible in dilute alkali (0.05% sodium hydroxide) consists of a vinyl acetate-crotonic acid copolymer which is blended with chlorinated diphenyl and a small amount of an antioxidant. Trimmings from the bookbinding operations can be sold as waste paper without detrimental effects. W.B.W.

ALKALINE PROCESSES—RECOVERY

HOCHMUTH, FRANK W. Chemical feeder for black liquor recovery systems. Canadian patent 496,969. Filed May 1, 1948. Issued Oct. 20, 1953. 3 claims. Assigned to Combustion Engineering, Inc.

A black liquor recovery system incorporates a vibrating screen mechanism for feeding salt cake into the salt cake mixing tank. This is the same as U. S. patent 2,583,145 (Jan. 22, 1952); *cf.* B.I.P.C. 22: 535. 2 figures. W.B.W.

BARKERS AND BARKING

GRISSETT, ANDREW F. Forestry tool for girdling trees. U. S. patent 2,655,763. Filed Aug. 30, 1951. Issued Oct. 20, 1953. 6 claims. [Cl. 47-1]

Three pairs of spaced-apart cutting wheels are mounted on a semicircular frame, with one set of cutting wheels adjustable with respect to the others. The tool is clamped on the tree, then rotated manually to force the pairs of cutting wheels through the bark and the scraper blade to remove the severed ribbon of bark. 6 figures. W.B.W.

MCCOMB, WILLIAM P., JR. Log debarker having revolving flails. U. S. patent 2,655,961. Filed Nov. 8, 1949. Issued Oct. 20, 1953. 1 claim. [Cl. 144-208]

Logs to be barked are fed by a chain conveyor through the annular opening of a stationary drum which, in turn, carries a pair of wheels mounted on the ring which revolves about the drum. Flails of wire rope or chain are bolted at intervals to these wheels and abrade the bark from the log as the units revolve. 7 figures. W.B.W.

BEATER ADDITIVES

AZORLOSA, JULIAN L. Paper product and process for its preparation. U. S. patent 2,654,671. Filed July 17, 1948. Issued Oct. 6, 1953. 16 claims. Assigned to Hercules Powder Company. [Cl. 92-21]

Paper which has high tensile strength under both wet and dry conditions is produced by the addition of a vinyl-substituted pyridine compound (2-vinylpyridine) which may be used with or without a rosin sizing agent. The material is applied as a beater size in amounts up to 15% based on the weight of the dry fiber. W.B.W.

BOARD

COLLINS, HOWARD W. Method of forming wood wool panels. U. S. patent 2,655,458. Filed Nov. 1, 1951. Issued Oct. 13, 1953. 8 claims. Assigned to Tectum Corporation. [Cl. 154-101]

Panels of wood wool or excelsior utilizing a cement of magnesium oxide and magnesium sulfate as a binder are formed by a continuous process of depositing the fiber on a moving conveyor, saturating the mat with the cement solutions, compressing the mat to the desired thickness between belts of a conveyor while the cement sets, and finally passing the panel through an oven to complete the drying process. 5 figures. W.B.W.

BOARD—COATED

FISHER, HARRY C., and SOOY, BRAINARD E. Process of coating paper webs and product thereof. U. S. patent 2,656,286. Filed Aug. 29, 1945. Issued Oct. 20, 1953. 4 claims. Assigned to Consolidated Water Power & Paper Company. [Cl. 117-60]

A nongloss coating for paperboard suitable for gloss-ink printing is produced by first applying a plasticizing agent to the board in aqueous solution, then a mineral coating containing starch, and subjecting the board to heat to insolubilize the starch. The board is then passed through a calender stack at which time the pores of the coating are sealed with a water-soluble substance, such as sodium silicate or carboxymethylcellulose, which is resistant to the vehicles of gloss printing ink. W.B.W.

FRIDOLPH, JOHN S. Composite sheet material and method of producing the same. U. S. patent 2,654,687. Filed July 20, 1950. Issued Oct. 6, 1953. 11 claims. Assigned to The Sorg Paper Company. [Cl. 154-98]

A decorative coating for wallboards made from wood fiber, asbestos fiber, gypsum, and the like comprises a resin film which is cast on a paper or film backing and applied to the surface of the board with suitable adhesive. Loss of the coating materials by penetration into the porous board structure is avoided, and the desired surface (imparted by the sheet on which the film is cast) is retained after application to the board. The backing sheet of paper or film may be left in place until the board is installed, then stripped off to expose the resin-film coating. 5 figures. W.B.W.

MCCORKLE, JAMES B. Process of producing primed hardboard. U. S. patent 2,654,296. Filed March 18, 1948. Issued Oct. 6, 1953. 4 claims. [Cl. 92-40]

Primed hardboard is formed by compression at 400 to 500°F. of a lignocellulosic board, one surface of which is coated with a proteinaceous coating composition. This is the same as Canadian patent 472,441 (March 27, 1951); *cf.* B.I.P.C. 21: 661. W.B.W.

BOARD, BUILDING

MAGNANI, ALESSANDRO. Method and machine for manufacturing corrugated fibrocement slabs. U. S. patent 2,655,196. Filed June 1, 1951. Issued Oct. 13, 1953. 12 claims. [Cl. 154-30]

Slabs of fibrous cement material are corrugated between sheets of rubber or other flexible material molded between upper and lower longitudinal elements which come together to form a die of the desired shape. 6 figures. W.B.W.

BOARD SPECIALTIES

CARRUTH, HERMAN A. Can carrier. U. S. patent 2,656,960. Filed Dec. 4, 1950. Issued Oct. 27, 1953. 6 claims. Assigned to National Folding Box Company, Inc. [Cl. 224-45]

A lightweight paperboard blank is glued to form a carrier with a medial partition and arcuate-shaped slits, the flaps of which are turned back to engage the chimes of the outermost cans and hold them in the carrier. 7 figures. W.B.W.

CURRIE, GROVER C. Carrier. U. S. patent 2,656,959. Filed Sept. 15, 1950. Issued Oct. 27, 1953. 5 claims. Assigned to Dacam Corporation. [Cl. 224-45]

Each section of this carrier holds three cans and may be separated along score lines, or two sections may be folded in a back-to-back relationship to form a carrier for six cans. The cans are retained in place by slots which engage the chime at the top and bottom of each can. 9 figures. W.B.W.

ELLSWORTH, RANSOM C. Carton construction. U. S. patent 2,656,092. Filed April 25, 1950. Issued Oct. 20, 1953. 1 claim. Assigned to The Ohio Boxboard Company. [Cl. 229-35]

A tray-type carton for packaging bakery products of a greasy nature has its upper edge folded outwardly to prevent contact of the product with the cut edge of the paperboard, thus preventing wicking of the grease into the board. The tray is overwrapped with cellophane to complete the package. 6 figures. W.B.W.

HOLLIS, MORTON. Display card for spectacles. U. S. patent 2,656,917. Filed July 19, 1950. Issued Oct. 27, 1953. 2 claims. Assigned to Foster Grant Co., Inc. [Cl. 206-79]

The ear pieces of sunglasses are engaged by U-shaped tabs cut in a display card which leaves the entire frame of the spectacle exposed to view. Distortion or straining of the frame is eliminated. 5 figures. W.B.W.

HOLLIS, MORTON. Spectacles display card. U. S. patent 2,656,918. Filed March 29, 1951. Issued Oct. 27, 1953. 1 claim. Assigned to Foster Grant Co., Inc. [Cl. 206-79]

This is very similar to U. S. patent 2,656,917 (Oct. 27, 1953; *cf.* abstract above) except that a W-shaped slit is cut into the card, with the spectacle ear pieces engaged between the two downwardly extending fingers and the intervening upward finger. 3 figures. W.B.W.

KVASNOK, JOHN D., KVASNOK, EUNYCE M., and CUTLER, ALVIN B. Frusto-conical container. U. S. patent 2,656,969. Filed July 26, 1950. Issued Oct. 27, 1953. 1 claim. [Cl. 229-21]

An arcuate-shaped blank of paperboard, metal, or plastic is provided with locking projections at one end and corresponding slits at the other end. The piece is bent to form a pot for nursery stock and the like; it may be easily removed by disengagement of the locking tabs and re-used. The bottom is left to support the ball of earth of the plant during transport. 9 figures. W.B.W.

RANSOM, JOHN B. Collar support. U. S. patent 2,655,295. Filed July 18, 1951. Issued Oct. 13, 1953. 12 claims. Assigned to Cluett, Peabody & Co., Inc. [Cl. 223-83]

The support comprises two strips. The longer strip is made from cardboard and contains slits at either end. The short strip of a flexible plastic material has a serrated lower edge with teeth that engage the slits and resist removal of the band from the collar. 9 figures. W.B.W.

RINGLER, WILLIAM A. Package for capped containers. U. S.

patent 2,654,474. Filed Feb. 23, 1950. Issued Oct. 6, 1953. 2 claims. Assigned to The Gardner Board and Carton Co. [Cl. 206-65]

Holes are punched at each end of a paperboard panel to form a carrier for bottles or cans. The containers are placed on the center of the blank and the ends of the sheet are folded over to engage the caps with distended flaps in the punched openings. 8 figures. W.B.W.

SMITH, GERALD R. Means for closing bags. U. S. patent 2,656,093. Filed July 28, 1949. Issued Oct. 20, 1953. 1 claim. Assigned to American Rock Wool Corp. [Cl. 229-54]

Paper bags for shipment and storage of batts of thermal insulation are closed by folding the ends in overlapping triangular flaps, placing the ends of the flaps between a folded fiberboard or heavy paper reinforcement and stitching or stapling through the reinforcement and the contained flaps. 5 figures. W.B.W.

CHLORINE DIOXIDE

EVANS, CYRIL H. Production of chlorine dioxide. U. S. patent 2,654,656. Filed May 11, 1950. Issued Oct. 6, 1953. 5 claims. Assigned to Addage Limited. [Cl. 23-267]

An apparatus for the production of chlorine dioxide includes a primary reaction chamber where the two solutions (28% sodium chlorate and 17% sodium chloride in one and 77% sulfuric acid in the other) are brought together. The mixed liquids flow from this chamber into a packed tower provided with coils through which hot water is circulated. This causes additional gas to be evolved from the liquids. A blower furnishes a stream of air which travels upwardly through the tower and sweeps through the primary reaction chamber to hold the concentration of chlorine dioxide to a safe level. 2 figures. W.B.W.

DIELECTRICS

PEYROT, PIERRE P., and CHEVALIER, PIERRE J. Asbestos-containing materials and processes of manufacturing the same. Canadian patent 497,080. Filed Aug. 9, 1949. Issued Oct. 20, 1953. 7 claims. Assigned to Société des Usines Chimiques Rhone-Poulenc.

An insulating material having good electrical properties and moisture resistance is produced by the impregnation of asbestos material or fibers with organosilicic resins, then curing the resins by heating to 300 to 500°C. W.B.W.

PEYROT, PIERRE P., and DUMOULIN, LOUIS J. Electrical insulating materials. Canadian patent 497,081. Filed Sept. 12, 1949. Issued Oct. 20, 1953. 13 claims. Assigned to Société des Usines Chimiques Rhone-Poulenc.

This is very similar to Canadian patent 497,080 (Oct. 20, 1953; *cf.* abstract above), except that the substitution of ethyl polysilicate for a part of the organosilicic resin is claimed to result in a product of equally good mechanical and electrical properties. W.B.W.

DISPENSING CONTAINERS

ADORNEY, CHARLES S., GILL, LESTER D., and MCILVAIN, JOHN G., JR. Dispensing box. U. S. patent 2,654,525. Filed Jan. 25, 1951.

Issued Oct. 6, 1953. 3 claims. Assigned to Oakite Products, Inc. [Cl. 229-17]

A fracture line along the upper end of one side panel of this carton for granular soap products forms an opening and pouring spout when the side panels are squeezed together at the corners adjacent the fracture line. 5 figures. W.B.W.

DIXON, CHARLES H. Dispensing carton with gable top. Canadian patent 496,817. Filed Aug. 25, 1950. Issued Oct. 13, 1953. 7 claims. Assigned to Ex-Cell-O Corporation.

A paperboard milk carton of square cross section has a gabled top, a portion of which becomes a pouring spout when the carton seal is broken and the gabled section extended. 7 figures. W.B.W.

HENDERSON, CHARLES A. Dispensing pack for interfolded sheet material. U. S. patent 2,656,916. Filed Oct. 6, 1950. Issued Oct. 27, 1953. 6 claims. Assigned to International Cellucotton Products Company. [Cl. 206-57]

Large cellulose tissue wiping sheets are interfolded and the stack doubled on itself to form a U-shaped pack which is placed into a container with a dispensing opening. 10 figures. W.B.W.

FOLDING BOXES

BORUCKI, EUGENE J. Display carton. U. S. patent 2,654,470. Filed June 26, 1952. Issued Oct. 6, 1953. 1 claim. Assigned to Container Corporation of America. [Cl. 206-45.14]

A carton blank is cut and scored across the front; the score lines extend onto each adjacent side panel in such a manner that, when these strips are depressed into the carton, a nest is formed to hold the article (sponges, cleaning pads, etc.) in the carton exposed to the view of the buyer. The middle and ends of the strips remain attached to the carton front and side panels. 3 figures. W.B.W.

INMAN, WILLIAM H., and HOLMES, RAYNOR M. Collapsible carton. U. S. patent 2,655,304. Filed Feb. 5, 1951. Issued Oct. 13, 1953. 8 claims. Assigned to Bloomer Bros. Company. [Cl. 229-39]

A carton for ice cream and the like is partially assembled and glued so that it may be stored and shipped in the flattened condition. The container is easily erected for filling and easily opened by the consumer. 11 figures. W.B.W.

MCREARY, RONALD. Locked paper box. U. S. patent 2,654,526. Filed Aug. 18, 1952. Issued Oct. 6, 1953. 5 claims. Assigned to Harry M. Mathers. [Cl. 229-33]

A box with hinged cover is formed from a one-piece blank of paperboard. Corner tabs on the cover section engage slits in the bottom section and lock the box in the closed position. This is a continuation-in-part of U. S. patent 2,610,782 (Sept. 16, 1952); *cf.* B.I.P.C. 23: 141. 8 figures. W.B.W.

SCHILLING, PAUL K. Egg carton. U. S. patent 2,655,305. Filed Oct. 30, 1947. Issued Oct. 13, 1953. 6 claims. Assigned to General Package Corporation. [Cl. 229-44]

A carton for packaging eggs consists of three sections hingedly connected together, two of the sections containing depressions to position the contents and the third section forming a cover. The hinge flange projecting from the edge of the carton is higher on one side than the other, thus making possible the packing of the cartons in the standard 30-dozen egg case. 6 figures. W.B.W.

LOADING AND UNLOADING—CARS

THOMPSON, CANEY A. Pulpwood boxcar unloader. U. S. patent 2,655,275. Filed June 6, 1951. Issued Oct. 13, 1953. 11 claims. [Cl. 214-47]

This device comprises a cradle for holding a boxcar and is tiltable about two axes. A baffle is extended through the car to ensure that the logs are ejected as the car is tilted about its transverse axis. 9 figures. W.B.W.

MACHINERY—CHIPPERS

FLATEBOE, EINAR I. Re-chipper. Canadian patent 496,699. Filed Dec. 18, 1951. Issued Oct. 6, 1953. 10 claims. Assigned to Sumner Iron Works.

A V-shaped vibrating trough produces a preferential alignment of the slivers which results in a larger percentage of acceptable chips. This is identical with U. S. reissue patent 23,650 (May 5, 1953); *cf.* B.I.P.C. 23: 769. 11 figures. W.B.W.

JOHNSON, CHARLES A. Wood chipper disk with radially oriented knives of graduated bevels. U. S. patent 2,655,319. Filed Sept. 24, 1949. Issued Oct. 13, 1953. 5 claims. [Cl. 241-92]

The knives in this chipper are of a nonuniform bevel from the inner toward the outer end of the knife. It is claimed that this construction produces less mechanical stress on the wood with a material reduction of fines. The knives are spaced sufficiently close together so that the wood does not touch the face of the chipper disk with resultant brooming of the end of the log. 13 figures. W.B.W.

MACHINERY—CONVERTING MACHINERY

AMYX, ELMER, and KRAMER, JOSEPH. Score breaker. U. S. patent 2,655,082. Filed July 26, 1946. Issued Oct. 13, 1953. 9 claims. Assigned to The International Paper Box Machine Company. [Cl. 93-52]

Tubular paperboard cartons which are shipped in a flattened condition have all longitudinal score lines (including the Van Buren ears) prebroken by a series of plows and sweeps which fold the flaps one way, then the other through an angle of 165° while the blank is carried by the conveyor. 15 figures. W.B.W.

ANNESS, RUSSELL W. Mechanism for freeing flaps and cutouts in carton blanks. U. S. patent 2,655,841. Filed July 19, 1949. Issued Oct. 20, 1953. 4 claims. Assigned to The Gardner Board and Carton Co. [Cl. 93-36]

Carton blanks, after cutting and scoring, are passed through a device wherein cam-actuated folding fingers bend adjacent flaps along cut lines to

ensure that the flaps do not adhere to each other. Fingers also engage cut-out areas retained within the blank and remove them as the blank is advanced along the conveyor. 7 figures. W.B.W.

BAKER, THOMAS R., and LEFIEF, FRANK M. Folding box machine. U. S. patent 2,655,843. Filed July 16, 1951. Issued Oct. 20, 1953. 10 claims. Assigned to Bemiss-Jason Machine Co., Inc. [Cl. 93-51]

A machine for forming boxes from prepared blanks involves the use of a plunger to force the blank into a die, thereby causing the locking corner tabs to engage the slotted areas and hold the box in shape after stripping from the die. 9 figures. W.B.W.

BURGER, MARTIN. Carton setup machine. U. S. patent 2,655,081. Filed July 20, 1948. Issued Oct. 13, 1953. 39 claims. Assigned to General Package Corporation. [Cl. 93-37]

An automatic machine is claimed for the assembly of egg cartons made from precut paperboard blanks, wherein the bottom is folded upward to form a double medial partition provided with slits to retain cross partitions which form the individual cells. 21 figures. W.B.W.

CONDON, ROBERT S. Paper container lining machine. Canadian patent 496,802. Filed Jan. 4, 1950. Issued Oct. 13, 1953. 20 claims. Assigned to Continental Can Company, Inc.

A container-lining machine embodies means for forming the liner from a supply roll, corrugating the liner, and inserting it into a container. This is identical with U. S. patent 2,579,907 (Dec. 25, 1951); *cf.* B.I.P.C. 22: 457. 15 figures. W.B.W.

DREW, WILLIS P. Method of and machine for forming linings. U. S. patent 2,655,080. Filed Sept. 10, 1947. Issued Oct. 13, 1953. 4 claims. Assigned to Arkell Safety Bag Company. [Cl. 93-8]

Linings or bags of stretchable paper are formed by applying adhesive to a web along the edge and also in transverse strips, joining a second web to the first while saturated steam is introduced at the nip under pressure. The joined webs are passed through a liquid bath, then a crinkling and corrugating device to impart stretchability. Heat is applied to cause ballooning before the completed bags are severed from the web. 9 figures. W.B.W.

HADDICAN, GEORGE F. Tool for tapering fiber pipe ends. Canadian patent 496,924. Filed Aug. 25, 1952. Issued Oct. 20, 1953. 2 claims.

Expanding chucks center the tool in the end of the fiber pipe with the tapering blade mounted on a face plate rotating about the pipe center. 3 figures. W.B.W.

SCHROEDER, SIMON E. Automatic partition strip feeding mechanism. U. S. patent 2,656,770. Filed Jan. 3, 1949. Issued Oct. 27, 1953. 26 claims. Assigned to American Partition Corporation. [Cl. 93-37]

The machine feeds preformed partition strips from a stack in a timed relationship so that the strips arrive at the assembly zone in the proper

sequence. The strips are deflected to an edgewise position as they are released and are supported in this position into the assembly zone. 49 figures.
W.B.W.

SILLARS, GEORGE S. Box blank forming machine. U. S. patent 2,655,844. Filed March 1, 1949. Issued Oct. 20, 1953. 7 claims. Assigned to Hoague-Sprague Corporation. [Cl. 93-58.3]

A machine is claimed for forming box blanks with a co-operating punch and die assembly which accomplishes the required cutting and creasing of the blank at one movement of the punch. The dies and the amount of web feed between successive operations are adjustable to accommodate blanks of varying sizes. 10 figures. W.B.W.

STENGER, RICHARD C. Machine for conveying and closing cartons. U. S. patent 2,654,981. Filed Sept. 2, 1949. Issued Oct. 13, 1953. 8 claims. Assigned to Sutherland Paper Company. [Cl. 53-145]

A conveyor and closing machine is claimed for transporting and closing cartons of the type having top flaps on the end walls and covers hinged to the rear wall. The bakery products or other materials are placed in the carton, the carton is passed through the closing device where the flaps are folded, and the cover engaged in the bottom section without damage to the contents. 6 figures. W.B.W.

WETHE, HARRY K., and DUNCANSON, ROBERT H. Container blank delivery mechanism. Canadian patent 497,063. Filed Aug. 10, 1950. Issued Oct. 20, 1953. 5 claims. Assigned to Package Machinery Company.

A device to flatten warped or bent container blanks and feed the straightened blanks to the box-forming machine is claimed. This is identical with U. S. patent 2,598,150 (May 27, 1952); *cf.* B.I.P.C. 22: 874-5. 12 figures.
W.B.W.

MACHINERY—COUNTERS

DE PALMA, AMEDEO. Sheet counting device for sheet handling machines. U. S. patent 2,656,979. Filed June 8, 1951. Issued Oct. 27, 1953. 3 claims. Assigned to National Folding Box Company, Inc. [Cl. 235-98]

Several actuators are interconnected in series so that the counter is not activated if a sheet of paperboard or boxboard is absent from any part of the press. The operator may also inactivate the counter with a manual switch if it is desirable to remove a sheet from the machine. A paper tab is inserted in the pile after each 50th sheet delivered to the stack. 8 figures. W.B.W.

TERRILL, THOMAS S. Lumber counting and computing device. U. S. patent 2,656,105. Filed Oct. 28, 1949. Issued Oct. 20, 1953. 12 claims. [Cl. 235-82]

A computing device contains a number of counters (which give a tally of the total number of pieces of a given size) and a series of computers for registering the units measured (e.g., board feet) as determined from the counters. The apparatus is actuated by levers similar to a typewriter. 8 figures. W.B.W.

MACHINERY—CUTTERS

RUPP, WILLIAM C. Knife control for paper-cutting machines. U. S. patent 2,654,429. Filed Oct. 27, 1949. Issued Oct. 6, 1953. 7 claims. Assigned to The Chandler & Price Company. [Cl. 164-52]

A power-driven paper cutter contains interconnected electrical and mechanical controls to ensure that the clamp engages the pile of sheets prior to activation of the knife and that the knife returns to its fully elevated position after each cutting cycle. 3 figures. W.B.W.

MACHINERY—DECORTICATING MACHINE

WRIGHT, WILLIAM E. Decorticator. U. S. patent 2,654,915. Filed June 18, 1946. Issued Oct. 13, 1953. 58 claims. Assigned to Sea Island Mills, Inc. [Cl. 19-11]

An apparatus for stripping the fiber from green ramie stalks consists of holding members and corrugated stripping drums which scrape the non-fibrous material from the stems. Suitable conveyors carry the fibers through the machine during processing and other conveyors remove waste materials. 26 figures. W.B.W.

WRIGHT, WILLIAM E., and BOND, ORSON H. Combined harvester and decorticator. U. S. patent 2,654,916. Filed March 9, 1948. Issued Oct. 13, 1953. 8 claims. Assigned to Sea Island Mills, Inc. [Cl. 19-12]

The decorticating apparatus is essentially the same as that claimed in U. S. patent 2,654,915 (Oct. 13, 1953; *cf.* abstract above). A cutter blade with necessary conveyors for harvesting, as well as track-laying units to make the machine mobile over soft ground, are added. 36 figures. W.B.W.

MACHINERY—DRYERS

ALLANDER, CLAES G. Method and arrangement for drying web-like material. Canadian patent 496,767. Filed Sept. 27, 1949. Issued Oct. 13, 1953. 15 claims. Assigned to Aktiebolaget Svenska Fläktfabriken.

A web-drying apparatus is claimed wherein the web is passed in close proximity to a duct or series of ducts through which the drying fluid (usually dry heated air) is forced by blowers. The top or bottom wall of the duct adjacent to the web is perforated with small holes to allow the dry air to come into contact with the web perpendicularly to the direction of travel and, in one embodiment of the invention, an exhaust duct is provided to facilitate removal of the spent drying medium. 8 figures. W.B.W.

HAYWARD, RALPH A. Method and apparatus for drying paper, paperboard, pulp and the like. Canadian patent 497,044. Filed July 24, 1950. Issued Oct. 20, 1953. 5 claims. Assigned to Kalamazoo Vegetable Parchment Co.

The inclusion of a vacuum roll after a suitable number of heated rolls in the drier section reduces the number of rolls required. This is the same as U. S. patent 2,532,910 (Dec. 5, 1950); *cf.* B.I.P.C. 21: 364. 6 figures. W.B.W.

MACHINERY—FOLDING MACHINE

APGAR, CHARLES W. Apparatus for handling corrugated paperboard. U. S. patent 2,657,044. Filed Aug. 31, 1950. Issued Oct. 27, 1953. 3 claims. Assigned to Seaboard Container Corporation. [Cl. 270-61]

A machine for the production of an endless strip of corrugated paperboard with transverse score lines discharges the board upward along an inclined member whose terminal section is slanting downward at such an angle that the board is folded into a zig-zag pile on the receiving skid. 7 figures. W.B.W.

MACHINERY—LAY BOYS

MCCLURE, NICHOLAS, and STACY, SAMUEL D. Sheet stacking and delivering machine. U. S. patent 2,655,272. Filed May 14, 1948. Issued Oct. 13, 1953. 10 claims. Assigned to American Box Board Company. [Cl. 214-8.5]

Double-faced corrugated board is delivered from the cut-off mechanism to a table where a pusher removes the sheets from the bottom of the stack in desired quantities. A stop is set at a predetermined height to control the number of sheets delivered at each movement of the pusher which is preferably operated intermittently. 12 figures. W.B.W.

MACHINERY—PACKAGING MACHINERY

BROWN, ROBERT B. Device for packaging flat flexible articles. U. S. patent 2,656,082. Filed Oct. 24, 1951. Issued Oct. 20, 1953. 5 claims. [Cl. 226-18]

A device for assisting in the hand packaging of flexible articles (e.g., bacon on a cardboard backing) is trough-shaped with walls that converge slightly at one end. The paper or cellophane bag in which the material is to be packaged is slipped over the small end of the device and the material moved along the trough and into the envelope. 6 figures. W.B.W.

BUECHEK, JOHN. Bulk paper plate wrapping machine. U. S. patent 2,656,659. Filed Dec. 26, 1950. Issued Oct. 27, 1953. 7 claims. Assigned to Paper Art Company, Inc. [Cl. 53-122]

Paper plates or the like are wrapped with heat-sealable material such as cellophane by this device which cuts a wrapping sheet of predetermined size from a supply roll, positions the sheet on a wrapping head, places the stack of plates on the sheet, retracts the article with the wrapper through a pleating head which folds the pleats flat against the article, and applies heat to seal the folded pleats. 11 figures. W.B.W.

CORLEY, MARK H., ARVIDSON, BENGT A., and BARBER, RALPH F. Combination sheeter and wrapper for package wrapping machines. U. S. patent 2,654,196. Filed March 7, 1949. Issued Oct. 6, 1953. 31 claims. Assigned to Miller Wrapping & Sealing Machine Co. [Cl. 53-45]

A roll of wrapping material, usually heat-sealable cellophane, is held in the machine, cut to predetermined lengths, and fed to the operator who places the article to be wrapped (bakery products and the like) on the sheet and wraps the sheet around the item. The folding of the end flaps and heat seal-

ing of the overlapped portions is then performed by the machine. 61 figures. W.B.W.

TOTAL, HENRI. Machines for making up parcels and packages. Canadian patent 496,801. Filed May 10, 1949. Issued Oct. 13, 1953. 5 claims. Assigned to Constructions Industrielles de Précision (Société Anonyme).

Several units to be wrapped are placed on the precut sheet and the outline of the finished package is established by edge plates which are free to move. As the package is advanced by the pusher, the sheet is folded over the leading edge and pressure shoes complete the end folds started by plows. 33 figures. W.B.W.

MACHINERY—PASTING MACHINE

BURBANK, WENDELL T., and COLGREN, CARL T. Machine for manufacturing container elements and the like. U. S. patent 2,654,343. Filed June 21, 1951. Issued Oct. 6, 1953. 8 claims. Assigned to Sutherland Paper Company. [Cl. 118-317]

A device for applying glue to selected areas of container elements comprising tubular wall members holds the glue in a closed system from which it is fed by compressed air and a metering plunger in the application head. A mandrel carries the container to the applying head which is rotated rapidly, depositing the glue in an annular band around the inside of the container wall. 5 figures. W.B.W.

MACHINERY—PULPERS

MORDEN, CHARLES W. Pulp shredding and treating machine. U. S. patent 2,654,294. Filed Aug. 22, 1950. Issued Oct. 6, 1953. 8 claims. Assigned to Morden Machines Company. [Cl. 92-26]

A pulper for shredding and defibering lap pulp, waste paper, and the like comprises a circular tank with a hemispherical bottom. The walls of the tank are flattened on opposite faces and on one face, a frustoconical rotor with blades extending past the perimeter of the rotor is mounted inside a stationary ring provided with teeth with which the rotor blades closely cooperate. The clearance between the rotor and the stationary blades is adjustable. On the opposite flattened wall, a screen is mounted through which the defibered stock may be continuously withdrawn from the pulper. 7 figures. W.B.W.

MACHINERY—REFINERS

SUTHERLAND, LIONEL M. Refiner apparatus. U. S. patent 2,654,295. Filed May 2, 1951. Issued Oct. 6, 1953. 7 claims. Assigned to Sutherland Refiner Corporation. [Cl. 92-26]

Refiner disks are provided with radially extending grooves shaped to produce a swirling motion within the groove as the disks are rotated in opposite directions, or one disk is rotated and the other held stationary. The swirling action is claimed to cause alignment of the fibers with the groove and result in better defibering. 12 figures. W.B.W.

MACHINERY—ROLL STANDS

SHIELDS, ALBERT F. Mill roll stand. Canadian patent 496,870. Filed Sept. 17, 1948. Issued Oct. 13, 1953. 3 claims. Assigned to S&S Corrugated Paper Machinery Co., Inc.

A mill roll stand to support rolls for feeding a corrugator features adjustable side plates to conform to the width of the roll in use. An expanding chuck engages the inside of the roll core at either end to support the roll in a rotatable position. Two rolls are held by the stand to provide a reserve roll readily accessible to the machine. 5 figures. W.B.W.

MACHINERY—SAWS

MATTSON, WILLIAM. Heavy duty tree cutter. Canadian patent 496,579. Filed March 8, 1952. Issued Oct. 6, 1953. 5 claims.

A tree cutting device for attachment to a tractor or other self-propelled vehicle consists of a V-shaped blade with saw teeth on each edge. The vehicle is driven toward the tree so that the teeth at the apex of the V engage the tree and the cutting is completed as the blade passes through the tree. 9 figures. W.B.W.

TOMLIN, ROBERT L. Pulpwood saw grinder. U. S. patent 2,656,738. Filed Dec. 5, 1950. Issued Oct. 27, 1953. 4 claims. [Cl. 76-37]

A grinding wheel is rotated by a flexible shaft connected to a suitable power source and adjustably mounted above a saw so as to grind the teeth at the proper angle. 5 figures. W.B.W.

MACHINERY—STRIPPING MACHINE

BAUMGARTNER, JOHN R. Blank forming apparatus. U. S. patent 2,655,842. Filed Aug. 18, 1950. Issued Oct. 20, 1953. 4 claims. [Cl. 93-36]

A carton-blank forming press employs stripper belts for removal of waste portions, especially side trim. These belts operate at different speeds, with those engaging the waste traveling faster than the blank, thus shearing the waste from the blank. 11 figures. W.B.W.

MACHINERY—WEB TRANSFER

BREYFOGLE, ROY H. Primary suction drum assembly. U. S. patent 2,656,768. Filed June 6, 1947. Issued Oct. 27, 1953. 4 claims. Assigned to Alton Box Board Company. [Cl. 92-43]

The object of the invention is the provision of a cylinder-type paper machine with a primary suction press to act on the freshly made fragile paper web before the direction of travel of the web is changed. It comprises a pick-up felt with the web carried on the under side of the felt. The covering felt engages the web prior to the suction press where the web is pulled away from the pick-up felt, then after the web and the supporting felts have reversed direction around the turning rolls, a second suction press tends to pull the web away from the covering felt. 1 figure. W.B.W.

MACHINERY—WOOD-SHAVING DEVICE

CLARK, JAMES D'A. Production of fibrous elements from woody material. U. S. patent 2,655,189. Filed Feb. 28, 1949. Issued Oct. 13, 1953. 7 claims. [Cl. 144-309]

A device for producing fibrous elements with tapered ends and of controlled length, thickness, and width comprises a hopper for holding the wood blocks mounted above a rotating table which carries a multidisk scoring unit and a drum-shaped cutter. The grain of the wood in the blocks is parallel

to the table and the face of the block is alternately scored, then shaved by the cutter. By suitable adjustment of table speed and cutter speed, elements of the desired characteristics may be removed from the wood. 7 figures. W.B.W.

MATERIALS HANDLING

SAMLER, LEE F. Apparatus for loading and unloading laminating presses. U. S. patent 2,656,048. Filed June 22, 1951. Issued Oct. 20, 1953. 4 claims. Assigned to The National Plastic Products Company. [Cl. 214-1]

This is a continuation of U. S. patent 2,656,047 (Oct. 20, 1953; *cf.* abstract below) with the addition of a loading platform on one side of the press and an unloading platform on the opposite side. Before laminated material is pulled from the press, linkages are applied to connect the plates in the press with those on the loading platform. Thus, as the finished laminates are withdrawn, fresh assemblies to be pressed are positioned between the platens. 7 figures. W.B.W.

SAMLER, LEE F. Press loading and unloading apparatus. U. S. patent 2,656,047. Filed Oct. 11, 1948. Issued Oct. 20, 1953. 4 claims. Assigned to The National Plastic Products Company. [Cl. 214-1]

Resin-impregnated layers of paper or fabric to be laminated by the application of heat and pressure are placed on polished metal plates for handling during the pressing operation. The dolly on which the material is carried to the press is positioned by a hydraulic elevator at the proper elevation, then a winch-powered cable engages the metal plate and pulls it into the press between platens. Unloading is a continuation of the loading procedure with the dolly located on the opposite side of the press. 8 figures. W.B.W.

TROYER, MARC D. Logging crane. U. S. patent 2,656,059. Filed Aug. 23, 1949. Issued Oct. 20, 1953. 2 claims. Assigned to Berger Engineering Company. [Cl. 214-147]

Log lifting tongs are pivotally connected to the end of the boom on a log handling crane. These tongs may be turned to engage logs at an angle to the boom. This corresponds to Canadian patent 490,194 (Feb. 3, 1953); *cf.* B.I.P.C. 23: 525. 5 figures. W.B.W.

MOLDED PULP ARTICLES

COX, JOHN W. Molded pulp carton. U. S. patent 2,655,303. Filed March 28, 1947. Issued Oct. 13, 1953. 11 claims. Assigned to General Package Corporation. [Cl. 229-2.5]

A cellular, molded-pulp egg carton with a hinged cover adapted to fit into a standard egg case is claimed. 10 figures. W.B.W.

GRANT, JESSE R. Egg tray and cover. U. S. patent 2,656,945. Filed Jan. 6, 1949. Issued Oct. 27, 1953. 8 claims. [Cl. 217-26.5]

A molded-pulp tray for holding eggs in a standard case utilizes alternate rows of egg-containing pockets and supporting posts which extend below the egg pocket. The cover is likewise supported by feet which engage the tray section and prevent the load of succeeding layers from bearing on the eggs. 14 figures. W.B.W.

PACKAGING

PIERCE, LEE D. Nesting container shells. U. S. patent 2,654,473. Filed Jan. 10, 1950. Issued Oct. 6, 1953. 5 claims. [Cl. 206-65]

A system for nesting cylindrical container shells of fiber or other material involves a progressively greater deformation toward the innermost container shell. Score lines pressed into the fiber shell form hinge lines about which the shell is bent until the inner shell forms two lobes with the score line touching the opposite wall. 10 figures. W.B.W.

SCHMITT, FRANK R. Bread package. Canadian patent 496,950. Filed May 15, 1948. Issued Oct. 20, 1953. 4 claims. Assigned to American Machine & Foundry Company.

A package made from cellophane or Pliofilm for sliced bread is claimed wherein the cut face of the bread is covered by a single continuous film and the folded ends of the package are located on the side-crust surfaces. 4 figures. W.B.W.

VERDE, CHARLES D. Package and parts thereof for delicate articles. U. S. patent 2,654,468. Filed Sept. 30, 1949. Issued Oct. 6, 1953. 1 claim. [Cl. 206-18]

A package for mailing delicate watch parts comprises a container of the telescoping base and cover type, two pads of cellulose wadding between which the part is cushioned, and two leaves of lint-free tissue paper for protecting the part from the cellulose wadding. 8 figures. W.B.W.

WHITE, RAY T. Lamp-bulb merchandising package. U. S. patent 2,654,472. Filed April 7, 1948. Issued Oct. 6, 1953. 4 claims. Assigned to The Hankins Container Company. [Cl. 206-65]

A lamp-bulb carton comprises an outer sleeve into which two tubes or wrappers are snugly fitted; each wrapper holds two lamps with the large portion of the lamp at the end of the tube. This corresponds to Canadian patent 468,350 (Sept. 26, 1950); *cf.* B.I.P.C. 21: 212-13. 16 figures. W.B.W.

PAPER—COATED

LOLKEMA, JAN. Process of forming an insoluble coating. U. S. patent 2,657,155. Filed May 28, 1948. Issued Oct. 27, 1953. 6 claims. Assigned to Naamlooze Venootschap: W. A. Scholten's Chemische Fabrieken. [Cl. 117-84]

A water-insoluble starch coating suitable for the manufacture of washable wallpaper or weatherproof paperboard is produced by the etherification and esterification of a hot alkaline starch paste with sodium chloroacetate. The above starch material is applied to the base and dried and the surface is treated with an aqueous solution of a polyvalent metal salt (e.g., aluminum sulfate, etc.) which contains an emulsified water-repellent paraffin material and which produces a water-insoluble salt with the acid applied in the first coating. Following the application of the second coating, the sheet is again dried. W.B.W.

RICHMOND, HOWARD B., and MORTENSEN, ROBERT W. Coating feed mechanism for gate rolls. Canadian patent 496,800. Filed June 18, 1951. Issued Oct. 13, 1953. 10 claims. Assigned to Consolidated Water Power & Paper Co.

A coating feed mechanism includes means for continuously carrying a coating material feed pipe forwardly and backwardly along the entire length of the nip of the gate rolls. This is the same as U. S. patent 2,604,067 (July 22, 1952); *cf.* B.I.P.C. 22: 966. 9 figures. W.B.W.

PAPER SIZING

LOLKEMA, JAN, and VAN DER MEER, WILLEM A. Process of manufacturing dry starch preparations soluble in cold water. Canadian patent 496,663. Filed Nov. 14, 1946. Issued Oct. 6, 1953. 9 claims. Assigned to Naamlooze Vennootschap: W. A. Scholten's Chemische Fabrieken.

A degraded, water-soluble, cold-swelling starch product is claimed which, when dried on the surface of a material in the presence of an acid catalyst, will produce an insoluble film. This is similar to U. S. patent 2,562,558 (July 31, 1951); *cf.* B.I.P.C. 22: 379. W.B.W.

LOLKEMA, JAN, and VAN DER MEER, WILLEM A. Process of manufacturing dry starch preparations soluble in cold water. Canadian patent 496,855. Filed Nov. 14, 1946. Issued Oct. 13, 1953. 9 claims. Assigned to Naamlooze Vennootschap: W. A. Scholten's Chemische Fabrieken.

A starch sizing material soluble in cold water is claimed which, when dried on the surface of a material in the presence of an acid catalyst (e.g., sodium hexylsulfate), produces an insoluble film. Cold-swelling starch is produced in neutral or alkaline medium in the usual manner, and the catalyst and a condensation product of melamine and formaldehyde are added. W.B.W.

LOLKEMA, JAN, and VAN DER MEER, WILLEM A. Process of manufacturing starch solutions which when dried will produce water resistant layers and cold swelling starches suitable for this purpose. Canadian patent 496,854. Filed Nov. 14, 1946. Issued Oct. 13, 1953. 3 claims. Assigned to Naamlooze Vennootschap: W. A. Scholten's Chemische Fabrieken.

A starch compound soluble in cold water but insoluble after heating is produced by reacting a starch such as potato starch with formaldehyde (20 to 40% formaldehyde based on airdry starch) under alkaline conditions. Melamine or another synthetic resin is added to the starch during the conversion to the cold-swelling stage. The above material is applied to fabric or paper, then cured at 120°C. to render the resin insoluble. W.B.W.

PAPER SPECIALTIES

BRADY, CHARLES V., and OTTINGER, AUGUST F. Bag of open-mesh material and paper. U. S. patent 2,655,969. Filed March 9, 1951. Issued Oct. 20, 1953. 7 claims. Assigned to Bemis Bro. Bag Company. [Cl. 150-1]

A ventilated bag with a draw-string closure is claimed in which the bottom of the bag is formed from two layers of kraft or creped paper and the upper portion from a paper fabric. The bag is stitched at the seam between the bottom and top and along one side and the bottom. 4 figures. W.B.W.

FULLER, LEONARD, and SZPER, JONAS A. Separator for electric secondary batteries. U. S. patent 2,655,552. Filed Aug. 30, 1949. Issued Oct. 13, 1953. 3 claims. Assigned to Leonard Fuller and Edmund W. Sudlow. [Cl. 136-145]

Separator plates for dry batteries are made by application of a layer of absorbent porous material such as kieselguhr bound with prevulcanized rubber latex to each side of a porous sheet of filter paper. The paper is employed only as a base upon which the separator plate is formed. 3 figures. W.B.W.

GECKLER, ERNEST W., and NEAR, JOHN F. Compartment bag. U. S. patent 2,654,527. Filed July 19, 1950. Issued Oct. 6, 1953. 2 claims. Assigned to Russell-Miller Milling Company. [Cl. 229-56]

A separate compartment is formed along one side of a paper bag by an overlapping of the bag walls; a pleat is provided at each side to allow sufficient space in the compartment. 6 figures. W.B.W.

GERARD, GEORGE A. Nonscratching packing pad. U. S. patent 2,657,158. Filed June 13, 1950. Issued Oct. 27, 1953. 1 claim. Assigned to Cotton Wood Products, Inc. [Cl. 154-54]

A pad for packing furniture and like articles comprises an envelope of heavy kraft paper with a filling of shredded paper, excelsior, cotton, or cellulose to form a flat cushion. Two plies of a creped or uncreped facial tissue of slightly larger dimensions than the pad are joined along two opposite edges of one face of the envelope to allow fullness and avoid rupture of the tissue sheets. 3 figures. W.B.W.

GRANGAARD, DONALD H. Process of manufacturing fibrous sheet covered plywood. U. S. patent 2,656,296. Filed June 5, 1951. Issued Oct. 20, 1953. 4 claims. Assigned to Paper Patents Company. [Cl. 154-132]

A cover sheet for plywood to mask surface blemishes, raised grain, etc. is made by impregnating a paper sheet of 110 to 210-pounds basis weight with a thermosetting aldehyde resin. The resin content ranges from 5 to 35% of the dry sheet. The impregnated sheet is heat treated to cure the resin, then laminated to the plywood with a suitable adhesive by the application of heat and pressure. 8 figures. W.B.W.

NICHOLSON, JAMES W. Sleeping bag made of paper. Canadian patent 496,935. Filed Jan. 23, 1951. Issued Oct. 20, 1953. 7 claims.

An expendable paper sleeping bag comprises outer and inner envelopes of waterproof paper with many layers of thin crinkled paper between the envelopes. This corresponds to U. S. patent 2,625,695 (Jan. 20, 1953); *cf.* B.I.P.C. 23: 528. 8 figures. W.B.W.

ROBINSON, JOHN W. Filter element formed of paper impregnated with thermoplastic resin. U. S. patent 2,654,440. Filed Oct. 18, 1951. Issued Oct. 6, 1953. 2 claims. Assigned to Fram Corporation. [Cl. 183-44]

A self-supporting filter element is formed by uniting a number of cells made from a kraft paper impregnated with urea-, melamine-, or phenol-formaldehyde resin. From 20 to 60% resin is applied (on the basis of dry

weight of the paper) after the paper is partially dried on the machine. Porosity of the impregnated sheet is controlled to a value of 0.5 to 30 seconds Gurley. 6 figures. W.B.W.

SANDBERG, ROBERT W. Manifold sheet having a crush-resistant transfer film. U. S. patent 2,655,453. Filed April 23, 1952. Issued Oct. 13, 1953. 1 claim. Assigned to The National Cash Register Company. [Cl. 117-36]

Manifold sheets provided with a gelatin coating with printing fluid in minute droplets contained therein is protected from crushing in storage by the inclusion of solid particles in the film. These particles are of such size that the diameter is from one to three times the film thickness. Sand, casein particles, or vinyl acetate polymer material particles may be used. 1 figure. W.B.W.

PHYSICAL TESTING—MOISTURE

TUCK, JAMES A. Moisture meter. U. S. patent 2,654,864. Filed July 23, 1949. Issued Oct. 6, 1953. 6 claims. Assigned to Carolyn Lahr. [Cl. 324-61]

The circuit for a moisture meter for use on paper, pulp, textiles, granular material such as grain, sugar, etc. utilizes dielectric loss as well as specific inductive capacity. A voltmeter measures the unbalance of a balanced bridge and is calibrated directly in moisture content. 1 figure. W.B.W.

RAYON—VISCOSE PROCESS

VON KOHORN, HENRY. Method for ageing alkali cellulose. Canadian patent 496,725. Filed April 16, 1946. Issued Oct. 6, 1953. 5 claims.

Regenerated cellulose products of improved strength are made from alkali cellulose aged one to four hours at 35-60°C. in a vacuum. W.B.W.

SEMI-CHEMICAL PULPING PROCESS

MESSING, HJALMAR S. Discharge device for finely divided fibrous material from a pressure system. U. S. patent 2,657,131. Filed May 26, 1949. Issued Oct. 27, 1953. 2 claims. Assigned to American Defibrator, Inc. [Cl. 92-6]

A pair of conical plugs rotate within a correspondingly shaped chamber to provide for a continuous flow of defibered material from the defibering unit suitable for wood chips, bagasse, bamboo, and the like. A certain amount of defibering is accomplished in the discharge unit as the material passes between the conical plugs and the abrasively lined chamber. 9 figures. W.B.W.

SURINO, ALPHONSE, GOODWIN, RONALD G., and KEHOE, RICHARD D. Digestion of ligno-cellulosic materials. Canadian patent 496,671. Filed May 5, 1950. Issued Oct. 6, 1953. 8 claims. Assigned to Pandia, Inc.

This patent covers a modification of the Asplund apparatus and of the Beveridge and Kehoe U. S. patent 2,323,194 (June 29, 1943). In the present design, the chips are not cut across the grain but the impeller functions in such a manner that no definite shear of the material is effected. The chips are introduced into an intermediate horizontal zone where they are subjected

to the action of steam and, if desired, chemicals, and then pass to a vertical chamber, at the bottom of which is an impeller with a speed of rotation of about 900 r.p.m. The chips are broken into fragments and then into fiber bundles but without cutting. This is the same as U. S. patent 2,616,802 (Nov. 4, 1952); *cf.* B.I.P.C. 23: 221-2. 9 figures. W.B.W.

SETUP BOXES

GORDON, HARRY B. Garment packaging box. U. S. patent 2,656,914. Filed Nov. 21, 1951. Issued Oct. 27, 1953. 4 claims. [Cl. 206-7]

Integral sheets of paperboard are formed into a shallow box and a telescoping cover element with corresponding notches in base and cover to accommodate the shank of a wire garment hanger. A lashing plate of paperboard with edges that interlock between the bottom and cover sections serves to hold the garment in place. 3 figures. W.B.W.

HAMBLET, MARCIA C. Nonspill powder container. U. S. patent 2,656,090. Filed Sept. 10, 1947. Issued Oct. 20, 1953. 4 claims. [Cl. 229-14]

A container for talcum powder and the like with either a telescoping or a hinged cover is provided with a cover liner of sponge rubber or other resilient material to seal the space between the side walls and the cover. In one modification, a sealing ring is placed around the inside of the box to form a siftproof closure. 7 figures. W.B.W.

SHIPPING CONTAINERS

BELSINGER, SAMUEL P. Heavy-duty fiber container. U. S. reissue patent 23,729. Filed July 29, 1953. Issued Oct. 27, 1953. 3 claims. Assigned to Belsinger, Inc. [Cl. 229-16]

A heavy-duty shipping container incorporates a double-wall partition which divides the container into two equal compartments. This is a reissue of U. S. patent 2,578,777 (Dec. 18, 1951); *cf.* B.I.P.C. 22: 470. 10 figures. W.B.W.

FALLERT, CLIFFORD D., and GEORGE, WALTER C. Master shipping container. U. S. patent 2,656,089. Filed Sept. 23, 1949. Issued Oct. 20, 1953. 6 claims. Assigned to Gaylord Container Corporation. [Cl. 229-14]

A relatively tall shipping container comprises a top section, bottom section, and a tubular liner section inserted into the bottom section and over which the upper section is telescoped and abuts the bottom section. The liner includes a two-ply bottom formed by overlapping extensions of the sides and a removable wall to enable the packer to reach the bottom of the container. Metal banding or a similar means is employed to fasten the container. 6 figures. W.B.W.

FULMER, CARL G., and INT-HOUT, DANIEL. Shipping and display carton. U. S. patent 2,654,469. Filed July 29, 1948. Issued Oct. 6, 1953. 2 claims. Assigned to Lever Brothers Company. [Cl. 206-45.11]

A shipping and display carton for articles such as toothbrushes in glass tubes comprises an outer container provided with liners perforated to support the articles away from the container walls. The lower liner may be removed

from the carton to display the items supported in an upright position and with the upper section exposed. 16 figures. W.B.W.

GEORGE, WALTER C. Container. Canadian patent 496,998. Filed April 17, 1951. Issued Oct. 20, 1953. 10 claims. Assigned to Gaylord Container Corporation.

A polygonal container is described which is very similar to Canadian patent 496,999 (Oct. 20, 1953; *cf.* abstract below), except that the cover is locked in place to form a siftproof seal thus making the container suitable for finely divided materials. 13 figures. W.B.W.

GEORGE, WALTER C. Shipping containers. Canadian patent 496,999. Filed Nov. 5, 1951. Issued Oct. 20, 1953. 6 claims. Assigned to Gaylord Container Corporation.

A polygonal container is claimed which is suitable for shipment of nails and other articles of hardware. This is identical with U. S. patent 2,620,119 (Dec. 2, 1952); *cf.* B.I.P.C. 23: 378. 23 figures. W.B.W.

KAPLAN, SIMON. Garment holding case. U. S. patent 2,656,913. Filed June 2, 1950. Issued Oct. 27, 1953. 2 claims. [Cl. 206-7]

A corrugated or cardboard shipping container is fitted with a rack comprising a metal strap with ears which project into the case and a strip of wood which engages these ears. Garment hangers are held by the strip to avoid displacement during shipping. 6 figures. W.B.W.

LEWIS, ERNEST H. Container for coilable material. U. S. patent 2,655,262. Filed Nov. 4, 1948. Issued Oct. 13, 1953. 3 claims. Assigned to The Patent and Licensing Corporation. [Cl. 206-59]

A shipping container is claimed for rope, wire, hose, etc. in reeled form, made from a single blank of strong flexible material which is suitably cut and creased to form, when assembled, a hollow core with armlike extensions which are adapted to encircle or embrace the coiled material, thereby holding it securely in place. The core of the container is adapted to be slipped over a reeling mandrel. 11 figures. W.B.W.

SULFITE PROCESS—SODIUM BASE (ACID)

GRAY, KENNETH R., and CROSBY, HARTZELL L. Preparation of sodium salts of carbonic acid by ion exchange. U. S. patent 2,656,245. Filed July 15, 1950. Issued Oct. 20, 1953. 9 claims. Assigned to Rayonier Incorporated. [Cl. 23-64]

This is very similar to U. S. patent 2,656,244 (Oct. 20, 1953; *cf.* abstract below). In addition, the use of carbon dioxide under pressure or carbonic acid for the regeneration of the resin to produce carbonate or bicarbonate is claimed. 2 figures. W.B.W.

GRAY, KENNETH R., and CROSBY, HARTZELL L. Process for the preparation of a sodium bisulfite solution. U. S. patent 2,656,249. Filed July 15, 1950. Issued Oct. 20, 1953. 7 claims. Assigned to Rayonier Incorporated. [Cl. 23-130]

The production of pure sodium bisulfite solution from natural brines or

crude chemicals is claimed by a process of adsorbing the sodium ions on a cationic resin, then regenerating the resin with sulfurous acid; a sodium bisulfite solution results from this regeneration process. 1 figure. W.B.W.

GRAY, KENNETH R., and CROSBY, HARTZELL L. Process of recovering chemicals from smelts obtained in pulping operation. U. S. patent 2,656,244. Filed July 15, 1950. Issued Oct. 20, 1953. 9 claims. Assigned to Rayonier Incorporated. [Cl. 23-48]

A recovery process for spent soda-base sulfite and bisulfite liquors involves evaporating and burning the liquor under reducing conditions in a furnace similar to that employed in the kraft industry. The smelt derived from the burning is dissolved to form "green liquor," and the liquor is treated with a cationic resin to adsorb the sodium ions; the effluent contains a substantial portion of weakly acidic components in volatile form, e.g., hydrogen sulfide. Regeneration of the resin is accomplished with sulfurous acid; the effluent from this process contains sodium bisulfite and free sulfurous acid which may be used as produced for cooking acid or be fortified with additional sulfur dioxide. 1 figure. W.B.W.

VANILLIN

PEARL, IRWIN A. Production of vanillic acid. Canadian patent 497,244. Filed Feb. 28, 1945. Issued Oct. 27, 1953. 4 claims. Assigned to Sulphite Products Corporation.

Production of vanillic acid and a polymer of vanillyl alcohol comprises the steps of reacting vanillin and silver oxide in alkaline mixture, acidifying the reaction mixture, and recovering the acid and alcohol polymer. This corresponds to U. S. patent 2,553,146 (May 15, 1951); *cf.* B.I.P.C. 21: 758. W.B.W.

WET STRENGTH

DANIEL, JOHN H., JR., LANDES, CHESTER G., and SUEN, TZENG J. Manufacturing wet strength paper containing cationic urea-formaldehyde resin. U. S. patent 2,657,132. Filed March 5, 1947. Issued Oct. 27, 1953. 7 claims. Assigned to American Cyanamid Company. [Cl. 92-21]

Cationic urea-formaldehyde resins are added to papermaking fibers, the sheet is formed, and the resin cured to a water-insoluble condition by the application of heat. This is identical with Canadian patent 467,505 (Aug. 22, 1950); *cf.* B.I.P.C. 21: 145. 2 figures. W.B.W.

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